Published by the Whole Earth Catalog

CoEVOLUTION Quarterly

WAYS OF NATIVE AMERICAN RUNNING pp.4–21

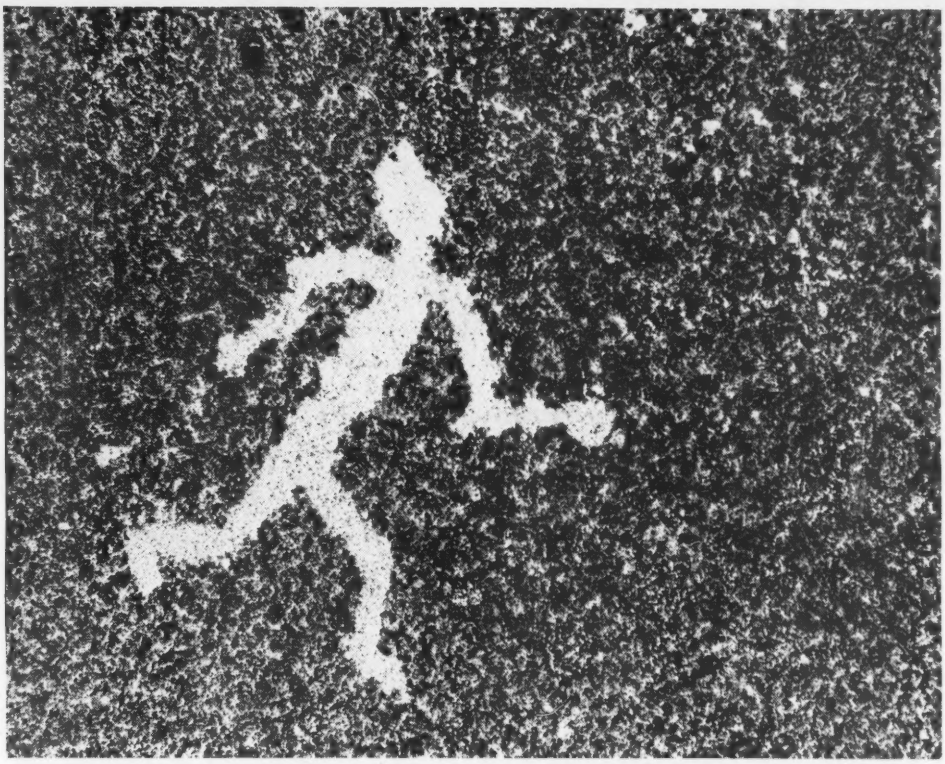
Also: Three new essays
by Ivan Illich on
VERNACULAR VALUES pp. 22–49

No. 26
Summer 1980
$3.50

San Geronimo Day Relay Races in September at Taos Pueblo, New Mexico, 1907. Photo by Matilda Cox Stevenson.

These ten-foot tall Shalako katchinas, couriers to the Zuni Priests, run along a prescribed track on the sacred grounds of Old Zuni in New Mexico during their festive ceremony in late November or early December. Along their course, they plant feathered prayer sticks for the fertility of the soil and the general well-being of the people. This 1920 photograph was by Ben Wittick.

David Noble



Pecked into a cliff face in New Mexico's Galisteo Basin is this unrestrained, running figure. He is part of one of the relatively rare narrative petroglyphs in the area.

He was alone and running on. All of his being was concentrated in the sheer motion of running on, and he was past caring about the pain. Pure exhaustion laid hold of his mind, and he could see at last without having to think. He could see the rain and the rivers and the fields beyond. He could see the dark hills at dawn. He was running, and under his breath he began to sing. There was no sound, and he had no voice; he had only the words of a song. And he went running on the rise of the song. ***House made of pollen, house made of dawn. Qtsedaba.***

–N. Scott Momaday.

House Made of Dawn, Harper and Row Publishers, 1966.

Front Cover

Hopi, 1919

Before dawn during the Lakon Basket Dance Ceremony, runners are taken by two Warrior Society members, whirling bullroarers to simulate thunder, to a point some distance from their Hopi village. When the sun appears on the horizon, the runners dash off, led by the water-gourd carrier. As another runner overtakes the leader, the gourd is passed to the front runner. Thus, the fastest man reaching the village with the water filled gourd symbolizes a cloud bringing rain. Photos by Emery Kopta from the Museum of the American Indian, Heye Foundation.

Back Cover

Chihuahua, Mexico, 1970's

Tarahumara women run long distances, sometimes in pairs, tossing, rolling, and carrying small hoops on their sticks. Women and men are trained from childhood for endurance. Photo by John P. Schaefer, President of the University of Arizona.

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The CoEvolution Quarterly □ Issue No. 26 □ June 21, 1980. Publication number 077150. Published quarterly by POINT, a California non-profit corporation. Office of publication (editorial and subscription): Box 428, Sausalito, California 94965 (27 Gate 5 Road). Subscriptions: $14 per year. Inquire for international air rates. Second-class postage paid at Sausalito, California and at additional mailing office. Claims for missing issues will not be honored later than three months after publication; foreign claims, five months.

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Subscription circulation: 25,000
Newsstand circulation: 16,000.

POSTMASTER: Please send form 3547 or 3579.

This issue of CoEvolution *has more articles and fewer item reviews than usual because production for* The Next Whole Earth Catalog *was going on at the same time and most of our reviewing went directly into it. You subscribers will be receiving the* Next Catalog *as your Fall* CQ – *See p. 144 for welcome details.*

There is a distinctly native and Spanish flavor to this issue – Indians running everywhere, Illich writing from Cuernavaca about vernacular values, a black humor view of South America, a splendid anonymous Mexican Indian lady poet, Chicano novels, psychedelic memories of the Spanish Civil War . . . We never planned a theme issue. Maybe it's a growing current in the real world, which swept us up lightly on its deepening flow. –*Stewart Brand (SB)*

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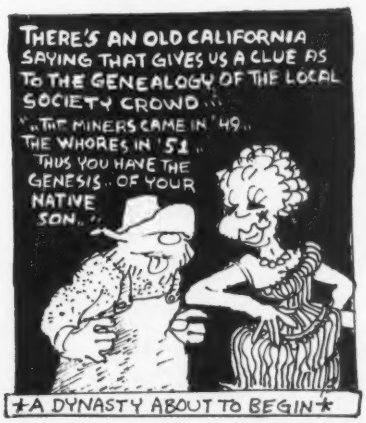
THERE'S AN OLD CALIFORNIA SAYING THAT GIVES US A CLUE AS TO THE GENEALOGY OF THE LOCAL SOCIETY CROWD...
"...THE MINERS CAME IN '49... THE WHORES IN '51... THUS YOU HAVE THE GENESIS... OF YOUR NATIVE SON..."
★A DYNASTY ABOUT TO BEGIN★

Denver Public Library

At dawn Hopi runners who have been blessed by Snake Society priests run five miles toward their home mesa, bearing sacred water which represents rain.

WAYS OF NATIVE AMERICAN RUNNING

by Peter Nabokov
Margaret MacLean

Seventy-four years ago, Fred Kabotie was waiting with other Hopi boys six hundred feet below his mesa-top village of Shongopovi, in the pre-dawn hours of the sixteenth day of the Snake-Antelope Festival. That year, 1906, was tense for the Hopi. Kabotie's traditionalist grandparents were under attack by reservation officials for their refusal to send six-year-olds like Fred to white boarding schools to learn the white man's ways. The Hopis themselves were bitterly divided. Also, the government was beginning a campaign to ban tribal ceremonials and the accompanying sacred races.

"Those bigger boys lined up about five miles from the mesa," recalls Kabotie. "The priest put this mud on their feet, blueish color, from the spring bottom. By the time that priest made circles on the ground ahead of them, the lead fellow who carries the sacred spring water in a little gourd was running, running." Young Fred kept his eyes peeled for the incoming racers who were handing ahead the gourd at each pass. "We joined in at the base, and all of us headed up into the plaza. We were doing it because we were the clouds, the people were the clouds coming to give us rain."[36]

These ritual runs during the early fall Basket Dances and the late summer Snake-Antelope or Flute ceremonies, which climax in the exhausting ascent of the steep rocky trail to the village on the mesa, represent but one category of the more than fifteen Hopi foot-racing events. Few Indian tribes today have kept their games as intact as have the Hopi and other southwestern Pueblo groups. At one time, however, running was a way of life for most of North America's over three hundred native groups, in addition to pre-Columbian peoples of Central and South America. In all manner of gaits, people ran as a means of travel, communication, transportation, ceremony and competition. Training and attention to running taboos were essential in the preparedness for hunting, warfare, ritual or sport – purposes frequently intertwined. A honed running ability meant readiness for sprinting or sustained roving in pursuit or flight, and for sport or mythic reenactment where victory was often beside the point. Running meets might mix entertainment, ritual, gambling and sympathetic magic for the purpose of keeping the sun on its path, inducing a nurturing rain, or reliving past victories in battle.

Peter Nabokov, a Research Associate of the Museum of the American Indian, has been teaching Native American Architecture at the University of California, Berkeley. With Robert Easton he is preparing a book on native American houses for Oxford University Press. Margaret MacLean, a graduate student in the Department of Anthropology, University of California at Berkeley, has specialized in the study of Latin American native material culture both in and out of school. She is currently investigating the archaeological record of the southwestern Indian ***kiva*** *for a second collaboration with Mr. Nabokov.*

©1980 Margaret MacLean and Peter Nabokov

Running in Folklore

Tribal mythologies celebrate the dramatic context of the race in epic creation tales as well as down-to-earth fables. The Cheyenne, Atsina, Dakota, Assiniboine, Blackfoot, San Carlos Apache, and Taos peoples tell their children variations on the story in which Old Man, having tricked some plump baby rabbits onto a bed of cooking coals, loses his meal through a challenge to race by trickster Coyote. Coyote seems crippled as he limps toward the turn-around marker with Old Man enjoying a confident lead. But on the home stretch, he opens up, and Old Man puffs into camp to discover Coyote sucking the last rabbit bone. Moral: the race was as fair as Old Man's treatment of the rabbits.[74]

Many Southeastern tribes, such as the Alabama and Cherokee, tell of proud Hummingbird being challenged by Crane to race. Overly confident, Hummingbird zips ahead in daylight, but stops at night to sleep, while Crane flaps patiently along. On the final evening, to avoid waking Hummingbird, Crane heads for higher altitudes, reaches the ocean, and wins the right to inhabit marshes and rivers forever. The lesson: racing is as much an exercise of consciousness as of speed.[73]

Racing stories often pit slower animals, like Crane and Turtle, against swifter beasts to emphasize the skills of pacing and cleverness. Before their ball games, Cherokee runners shied away from rabbit meat because of that animal's scattered wits. Instead, they rubbed their thighs and calves with turtle legs to acquire endurance and inner stability.

The Cheyenne tell of the mythic race which decisively separated men from animals. In the magical time when men and animals talked together, the fast split-hooved rallied for a Great Race against men and their animal helpers, from Devil's Tower, North Dakota, to Wyoming's Grand Tetons. In the relays, men were paired against elk, dog against deer, eagle against antelope, hawk against buffalo. The last lap saw the hawk pull away to alight on the highest peak, with buffalo spent at the bottom. The split-hooved creatures withdrew without a word, thereafter eternal losers in man's hunts.[51]

Swampy Cree: How "Followed the Heron Shade" Got Her Name

She knew two herons flew over each morning, and sent their shadows along the ground below them.

Those birds were going to meet the cool mud with their feet, in a far place I still know about. But I don't walk there anymore because my ankles are too old.

She would wake early and run after their shadows, trying to keep in their shade!

This was moving heron shade she chased along the ground.

Each time she had to stop at the edge of a lake, and watch those shadows float out and become rafts shaped like herons on the water.

That's what happened. Finally, we saw those herons were giving us her name.[57]

Creek: Aesop According to the Creeks

The Terrapin proposed to the Wolf a race, and he scornfully accepted. The race was to begin at the top of one hill and to extend to a fourth hill. That night the Terrapin summoned all his kinfolk to help him and they were to take their stations all along the route, each to wear a white feather on his head.

The time came, the word was given, and when the Wolf reached the top of the second hill he saw a Terrapin ahead of him running down the hill; the white feather waving in the grass. He soon passed him, but, on reaching the third hill, there was the Terrapin still crawling ahead. He ran himself out of breath, but, on reaching the last hilltop, to his mortification there sat a Terrapin at the stake, his plume waving in triumph.[73]

Training

Kabotie recalls that all Hopi boys were encouraged

Museum of New Mexico

Fred Kabotie, dean of modern Hopi painters. As a boy he participated in the sacred Snake Dance race up Second Mesa.

Smithsonian Institution, National Anthropological Archives

Plenty Coups (ca. 1849 - 1932)

Catch Me That Butterfly

"The day was in summer, the world green and very beautiful. I was playing with some other boys when my grandfather stopped to watch. 'Take off your shirt and leggings,' he said to me.

"I tore them from my back and legs, and naked except for my moccasins, stood before him.

" 'Now catch me that yellow butterfly,' he ordered. 'Be quick!'

"Away I went after the yellow butterfly. How fast these creatures are, and how cunning! In and out among the trees and bushes, across streams, over grassy places, now low near the ground, then just above my head, the dodging butterfly led me far before I caught and held it in my hand. Panting, but concealing my shortness of breath as best I could, I offered it to Grandfather, who whispered as though he told me a secret, 'Rub its wings over your heart, my son, and ask the butterflies to lend you their grace and swiftness.'

" 'O Butterflies, lend me your grace and swiftness!' I repeated, rubbing the broken wings over my pounding heart. If this would give me grace and speed I should catch many butterflies, I knew. But instead of keeping the secret, I told my friends, as my grandfather knew I would," Plenty Coups chuckled, "and how many, many we boys caught after that to rub over our hearts. . . . We worked very hard at this, because running is necessary both in hunting and in war. . . ."[42]

Alfonso Ortiz: Blind Man's Advice

A wise elder among my people — the Tewa Pueblo Indians — frequently used the phrase *Pin pe obi*, "look to the mountaintop." I first heard it when I was seven years old, as I was practicing for the first time to participate in relay races we run in the Pueblo country to give strength to the sun father as he journeys across the sky.

I was at one end of the earth track which ran east to west, like the path of the sun. The old man, who was blind, called me to him and said: "Young one, as you run, look to the mountain top," and he pointed to Tsikomo, the Western sacred mountain of the Tewas. "Keep your gaze fixed on that mountain, and you will feel the miles melt beneath your feet. Do this, and in time you will feel as if you can leap over bushes, trees, and even the river."[59]

Willa Cather: Indian Business

North of Laguna two Zuni runners sped by them, going somewhere east on "Indian business." They saluted Eusabio by gestures with the open palm, but did not stop. They coursed over the sand with the fleetness of young antelope, their bodies disappearing and reappearing among the sand dunes like the shadows that eagles cast in their strong, unhurried flight.[7]

to run. "Not training on schedule. They would just say, your uncles, 'run down to that cornfield, run back.' 'Get up in the morning, before sunrise, go down to the spring for a cold bath.' In winter, if you were lazy, your uncle could roll you in the snow. That's hard, you know, it melts slowly." Similarly, Alaskan Tlingit uncles flogged lazy youths with branches, or submerged them in icy water so long that they had to be revived by pouring hot fish oil down their throats. Thus they acquired the blessing of *iatsin*, inner and outer strength.[37] Once a Navajo boy reached eight years of age, he was hardened by carrying armloads of ice, burning his hands and forehead, and constant running.[40] The Santee Sioux writer

Short Tarahumara races might last twelve hours, longer runs can last up to three days. Women love running as much as the men.

Charles Eastman remembers racing as occurring every day, generally at noon, when the sun was at its hottest, with 50 paces as an average course. Losers complained they had drunk too much water.[13] A fleet boy might gain lasting fame; the Hunkpapa Sioux artist Running Antelope got his name after he spent five hours running down a full-grown antelope.[68]

Running as Work

When boys became men, running was essential in carrying out everyday chores. Kabotie remembers: "I was grown and had horses out in the country more than five miles away. I'd get up early to run after them – without shoes you do better, sand gets into your moccasins and you have to sit down to take it out – and drive them to the village ahead of me." Early white observers were astonished to see Hopis set out from Oraibi before dawn, jog 35 miles to cultivate corn at Moenkopi until late afternoon, and run home at nightfall. Bearing important messages, Hopi runners were known to cover 120 miles in fifteen hours.

Elsewhere, too, Indian "work-running" amazed outsiders. The author Ernest Thompson Seton was visiting Fort Ellice in Canada in 1882 when a young Cree arrived with dispatches from Fort Qu'Appelle, 125 miles distant. Of the 25-hour, non-stop trip, local storekeepers merely noted, "pretty good run." Studying the Pima-Papago in 1905, the scholar of Indian physical development, A. Hrdlicka, was told about native racers whose speeds only galloping horses could match.[34]

Along with fetching horses and sending messages, running was important for toting goods, although the pace might be adjusted to the weight. Kabotie's grandfather was not a notable runner, but "He'd carry one of those coal sacks, maybe 150 pounds, up the mesa. When I'd go with him on foot, he'd say, 'Let us go sort of *tich-mama*, like a fox-trot, without stopping but faster than walking. Another word for that is *hena-nata*, not fast, but not stopping. Fast runner pace is *a-nee-wa-dio-kta.*"

Karl Kernberger

Among the Tarahumara, children begin training to run as soon as they can walk.

Tarahumara

No tribe's work, play and identity revolves so closely around running as that of the Mexican tribe whose name means footrunner: *raramuri* or Tarahumara. A defiantly independent people, numbering about 40,000, they inhabit caves and isolated houses scattered throughout 35,000 square miles of rugged landscape in southwestern Chihuahua. Notebooks of every white who has entered their canyon strongholds, at seven to nine thousand feet above sea level, contain anecdotes on their phenomenal stamina:

1894 Carl Lumholtz mentions a Tarahumara letter carrier covering 600 miles of winding, up-and-down trails from Guazapares to Chihuahua City in five days.[47]

Karl Kernberger

M. Leeves, Arizona State Museum

A favorite Navajo sport was the "old man's race". Unlike the white man's get ready, get set, go, the Navajo began their runs with a 1-2-3-4 count.

Four Crow runners (Sees the Ground, Pretty Paint, Comes Up Red, and Victory Singer) at the starting line. In the old days impatient racers might make a dozen jump-starts before the run was actually launched.

Smithsonian Institution

c. 1900 Alexander S. Shepherd hired Tarahumara *cargadores* to haul an upright piano through 185 mountainous miles. Three sets of men, spelling each other every half-hour, made the trip in a little over fifteen days; the men sprinted the 185 miles home in three days.[18]

1924 Ernest Thompson Seton described a Tarahumara postman who routinely covered 70 miles a day, seven days a week, bearing a heavy mailbag.[68]

1971 Michael Jenkinson heard about a Tarahumara courier who left the Sisoguichie Jesuit mission to check on health conditions in his

The Inca Runner System

With no written language, the administration of the enormous Inca Empire relied on a system of runners called *chasqui*. They were selected from families known for their loyalty to the Emperor. Their relay stations were placed about two miles apart along the vast Inca road system. These broad, smooth roads were planned and built for foot traffic, for although llamas served as beasts of burden, no animals were ridden, and no wheeled vehicles were used before the Spanish Conquest.

Incoming runners would announce their impending arrival with a conch-shell trumpet blast to alert a runner at the relay station to be ready to pick up the message for the next lap. In this way messages could be transmitted a thousand miles in three or four days time under prime conditions. It was said that a snail picked from a leaf at Tumi, in the far north of the Empire, could be delivered alive to Cuzco, in the southern highlands.

Inca *Chasqi*

For visibility runners wore white feather caps. Their sandals were often shorter than the foot to allow for toe-holds in the rocky terrain. They carried a sling for defense, the shell trumpet, and sometimes a set of knotted cords (*quipu*) for use as a mnemonic aid in message transmittal.[22, 27]

people's villages, and covered 50 miles in six hours including stops en route.[35]

1976 James Norman exhausted himself descending 4000 feet into one canyon, only to be passed by two loping Indians shouldering ten-foot wooden beams which they had cut and trimmed on the canyon rim and were delivering green for eighty cents apiece.[58]

1979 Bernard L. Fontana bought a 65-pound earthenware jar for the Arizona State Museum and hired an elderly Tarahumara to carry it out of the canyon; the old porter made the 16-mile trip that night and was back by dawn.[18]

Behind such feats lies a cultural support system which makes notable running the goal of every toddler. Some Tarahumara communites feature men's *raraijapari* – kick-ball game – every Sunday, and pass-the-hoop games for women. A short course might entail two competing teams of two to twelve runners each, shovelling a three-inch pine ball ahead with bare or sandalled feet non-stop for twelve hours. Normal races lasted for three days and nights and covered several hundred miles. In the 1890s Carl Lumholtz witnessed one such game in which 21 miles were run in two hours, and where the front-runner's initial lap was 290 feet in 19 seconds. Elaborate preparations for such races included application of magical ointments, taboo observances, and bet-making.

Couriers and Roads

In their reliance upon runner-messengers to knit together the far-flung hamlets with news and dates of upcoming events, the Tarahumara preserve one of the oldest communications systems in the Americas. In pre-Columbian times, runners and porters, hunters and warriors covered a tracery of paths which ultimately connected Hudson Bay to the Gulf of Mexico, and the east coast to the west coast across native routes to New Mexico and the Pacific.

In the northeast, runners covered 300 miles of trails which connected the Iroquois Confederacy's "eastern door" – around Albany – to their "western door" at Buffalo, in 70 hours. In 1794, one famous Seneca named Sharp-skins did the 90 rolling miles from Canadaigua to Niagara between sunrise and sunset.

Moche Art of Peru, Christopher B. Donnan (UCLA) 1978.

This drawing of runners was made by Donna McClelland from a ceramic bottle of the Moche, a culture which flourished six or seven centuries before the Inca. Evidence reveals a fully developed road system for this time period.

Museum of the American Indian

A Zuñi kick-stick racer with the sacred *tik-wa*, kick stick, resting on his foot. Like the kick-ball, the stick must not be handled during the race. Runners scoop it ahead of them rather than actually booting it, to avoid injuring their feet.

Ball and Stick Races

Unlike the Tarahumara, the Hopi today drive pickups between their three mesas. However, the kick-ball game played at the Western Pueblos (Hopi and Zuñi), representing the second category of Hopi running event, remains a feature of community life. Its season begins after February with a semi-sacred series of runs before which the ball of sandstone or piñon sap is blessed with cornmeal. Opposing teams race until the faster one kicks its ball over the edge of the mesa.

Once, young men practiced all year for this; in the early morning their tinkling bells could be heard as the men ran to bathe in special springs. Before the first races, men abstained from meat, grease, salt, and sexual relations. To the Hopi, these races encouraged downpours in the valley: the water rolling clay pellets ahead of it much as the men kick the balls along the desert. Players wrapped their big toes with cloth, but even so returned home with swollen feet.[83]

From now until planting time, an open season for racing was declared. It took on a more secular aspect, and betting was allowed. Clan challenged clan, their runners wearing identifying feathers, body paint, or garments. *Kiva* (religious-political groupings within each village) would compete against *kiva*, and village against village.[75]

To the southeast of Hopi land, the Zuñi Indians substituted a *tik-wa*, a three-inch sacred stick, for the kick-ball, and began their games in early summer. The Zuñi believed the sticks contained powers to draw them into speed and endurance; it was normal to see men and boys kicking sticks on their way to the fields. In Zuñi folklore, the kick-stick runs originated with the two War Gods, who were famous gamesters and heroes. If a roosting bird suddenly alighted the day before a race, or an owl's hoot was heard, the race was postponed. On the other hand, lightning or falling stars were auspicious racing omens. Zuñi racers abstained from coffee for fear of distending the stomach. Before dispatching the kick-stick players, a priest tied their hair in knots, fastening in arrow points for speed.[70]

Starting south of the pueblo, four or five-man teams would kick sticks on a circuit of twenty to forty miles around familiar landmarks, thus protecting the coming crops inside that area from sandstorms. Upon the runners' return, the kick-sticks were hurled into the river to be carried to the home of the Cloud Beings. Thus the Zuñi racing season opened. Corn was planted, and subsequent races brought heavy betting of concho belts, horses, and sheep, while the racers themselves took offerings to special runners' shrines and sought speed magic from the shamans.

In the southwest, sophisticated "remote sensing" equipment has traced a prehistoric road system in Chaco Canyon with some 200 miles of curbed roadways, sometimes connected over bluffs by staircases, which quite likely carried runners.[81] It is known that runner systems helped to maintain the Empires of the Aztec, Maya, and Inca. From the Gulf of Mexico, relays of Aztec porters delivered fresh fish to the capital at Tenochtitlan; from there couriers carried written messages in forked sticks to all corners of Montezuma's Empire. The Maya roads, called *sacbeob*, constructed in some areas of dressed limestone and gravel, may have supported a regular runner service. And in Peru, the Inca *chasqi* system was so effective as to be retained in a modified form by the Spanish postal system into the nineteenth century.[85]

San Geronimo fiesta at Taos, New Mexico. Races are run east to west to keep the sun moving along its path for a good harvest. On ceremonial occasions, Taos runners wear tufts of bird down to make them light.

D.H. Lawrence Visits Taos

The Indian way of consciousness is different from and fatal to our way of consciousness. Our way of consciousness is different from and fatal to the Indian. The two ways, the two streams, are never to be united. They are not even to be reconciled. There is no bridge, no canal of connexion. . . . You can see this so plainly in the Indian races. Naked and daubed with clay to hide the nakedness, and to take the anointment of the earth; stuck over with bits of fluff of eagle's down, to be anointed with the power of the air, the youths and men whirl down the racing track in relays. They are not racing to win a race. They are not racing for a prize. They are not racing to show their prowess.

They are putting forth all their might, all their strength, in a tension that is half anguish, half ecstasy, in the effort to gather into their souls more and more of the creative fire, the creative energy which will carry their tribe through the year, through the vicissitudes of the months. . . . As if hurled from a catapult, the Indian throws himself along the course, working his body strangely, incomprehensibly. And when his turn comes again, he hurls himself forward with greater intensity, to greater speed, driving himself, as it were, into the heart of the fire. And the old men along the track encourage him, urge him with their green twigs. . . . And he walks away at last, his chest lifting and falling heavily, a strange look in his eyes, having run with the changeless god who will give us nothing unless we overtake him.[38]

The men of Santa Ana, Acoma, and Cochiti pueblos play kick-stick in imitation of the masked spirits known as *katchina*, who bring rain. "If you watch that water coming down off of a mesa during a rain," explained an Acoma man, "you will see that it does not flow evenly. It comes in spurts. That is because the *katchina* are running along, kicking their *atcawaiyu* (kick-sticks)."[88] At Jemez pueblo, preparations for the harvest kick-ball races begin in spring. Aspiring runners comb the forests for plants – pine, fir, and scrub oak – which fast-moving deer like to eat, along with the heart of the Spanish Dagger plant. These are steeped to make a potent emetic which runners take for purification after their five to ten mile training runs each morning. Around their practice areas they bury prayer feathers to appease the landscape's spirits and to avoid stubbed toes.[67]

Relay Races

For most of the eastern pueblos along the Rio Grande, the favored race is not kick-ball but the relay, run on straight tracks generally in March and April. At Taos, Isleta, and Jemez, running is associated not with rain, but with the sun, the racers dashing back and forth on east-to-west tracks to aid the sun in its course through the heavens. A deeper symbolic connection ties these runs to warfare, as the runners handle surrogate war trophies to acquire the same powers once needed for combat.

At Isleta, medicine men employ an all-seeing crystal before the race, to make certain that there are no tacks or high winds are in their runners' way. The relay races sometimes confuse onlookers since teams are positioned at both ends of the

1.

2.

3.

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Hopi runner katchina masks
1. Aya, Rattle Katchina
2. Homsona, "He-Cuts-Your-Hair"
3. Kokopell'Mana, "Assassin Fly Girl"
4. Novantski-tsiloaqa, "He Strips You"
5. Kisa, Prairie Falcon Katchina
6. Choqapolo, Mud Katchina

6.

Hopi: Running for Rain

When the Sand Chief takes the prayer feathers, to pray on them and leave them in the fields, he goes barefooted and without covering on limbs or body, that the Cloud chiefs may see he wants rain. He runs swiftly that the clouds may come swiftly, that his prayers be quickly answered. He loosens his hair, and lets it hang over his shoulders, for thus the Cloud chiefs carry the rain clouds. He makes a far circuit on the first day, because the Cloud chiefs live far away. He goes to the northwest, southwest, northeast, and southeast, to call the attention of all the Cloud chiefs . . . on each succeeding day, he travels in a shorter radius. It is thus we want the rain clouds to come, nearer and nearer, until on the concluding day of the ceremony they shall have come overhead and poured down the heavy rain upon ourselves, our houses, and all the surrounding lands, and we may see the arroyo full of running water and listen to its sweet sound.[75]

track. The race begins with two opposing men taking off from one end first. Reaching their teammates, they hurry to the rear of their line as team captains send other runners back. Back and forth they dash until one side gains an entire lap on the other to win.

After these races, the secular races can begin, with the separate moieties of the pueblo – Winter and Summer people – competing against each other. When husbands run against bachelors, the girls jeer the married men: "We run like deer or birds, you run like donkeys or dogs."[60]

Runner Katchinas

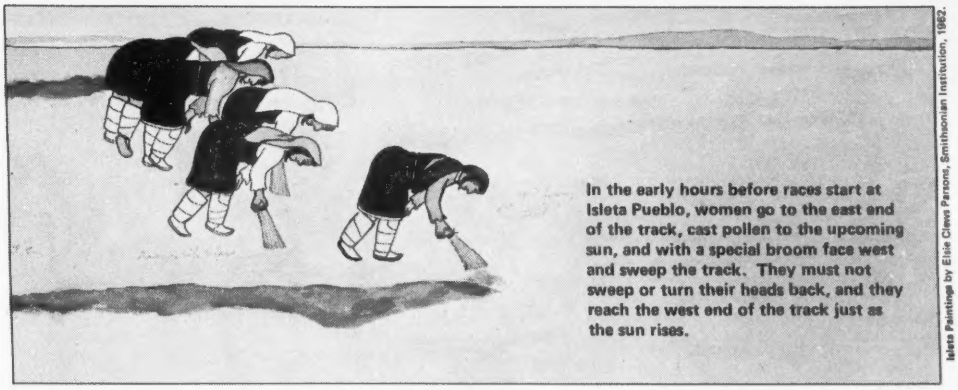
Probably the most entertaining of all pueblo runs is the third category of Hopi races, that of the *Wawash Katchinum*, or Runner Katchinas, which still takes place at Shongopovi in the early spring. Only last year, Fred Kabotie found himself hilariously caught up in this event. "At this time, in April, these special katchinas come to the village just to make people run. First they get all fixed up down in the kiva, then go off to the edge of the mesa before going from kiva to kiva saying, 'We are contesting you in running, everybody come.' So they challenge you, and when one catches you, the *Choquapolo,* that mud katchina, he hits your back or anywhere with mud. *Hemsona*, or hair-cutter katchina, he clips off your hair if he gets you. *Tsil* katchina puts hot chili in your mouth. *Kokopell'Mana*, they knock down their victims and pretend copulation on them. That's where the fun comes in. Those two Kokopell caught me, and there was a big fight when my aunts rushed in to pull me loose."

During the early spring, over twenty of these elaborately costumed Runner Katchinas may appear in the Shongopovi plaza, each distinguished by the particular punishment they might inflict on slow runners they overcome: a crack from a yucca whip, dung in the face, a slap with a rabbit-hunting stick.[9] Perhaps it was from the Hopi that the Navajo, known for appropriating traits, got the inspiration for their *Hastseltsi*, god of racing. When he challenges someone to a race, he jumps the starting line to unsettle his opponent, and whips him if he loses.[52]

Running Magic

Ritual running was not restricted to the southwest. The Tobacco Society adoption ceremony of the Montana Crow featured a warriors' run toward a sacred garden, which granted the winner good luck on his next war party.[46] The Iroquois staged races as part of their mourning rituals. During mortuary rites for someone who died unusually young, the Omaha held races in which young women ran if the deceased was a girl, young men if he was a boy.

To aid the runners there were magical potions to ingest, to apply to the body, or to carry in pouches. When the Hidatsa woman Waheenee was a girl along the upper Missouri River, her favorite plaything was her father's hunting cap, a



In the early hours before races start at Isleta Pueblo, women go to the east end of the track, cast pollen to the upcoming sun, and with a special broom face west and sweep the track. They must not sweep or turn their heads back, and they reach the west end of the track just as the sun rises.

Isleta Paintings by Elsie Clews Parsons, Smithsonian Institution, 1962.

helmet of buffalo hide with two ears stuffed with antelope hair to imitate jackrabbit ears. Her father had dreamed of these nimble animals and felt this hat gave him their power.[93] Assiniboine runners chewed special herbs, then put them on the soles of their feet and ran in the footsteps of the leading opponent, charming him sufficiently to allow a final spurt past to victory.[48] An Arapahoe Ghost Dance song credits the wind for help in running: "Our father, the Whirlwind, by its aid I am running swiftly."[55]

Vision Runs

No ritual surpassed the Papago salt pilgrimage in using running to produce a transcendent experience. The runner's role permeates Papago liturgy and song. "Am I not the runner . . ." begins the speechmaker at the Saguaro Wine Feast which celebrates the tribe's new year. He goes on to describe a dream-like run toward a magical rain-house full of winds, clouds and seeds.[78]

But the great Papago beach runs, for which the

The Breeze Coming From Her As She Runs Is Beautiful

The running feature of the *Kinaalda*, the Navajo girl's puberty ceremony, was handed down by a major female culture hero, Changing Woman, in order to inspire endurance and toughness. During her five-day ritual, a girl might run three times a day, as far as she likes so long as she runs eastward and turns sun-wise. Each day her body is massaged and her hair combed – all to make her as strong, upright, and beautiful as Changing Woman.

Each of her runs should be longer than the last, for the farther she runs, the longer she will live. To shorten the course or to rest suggests laziness and invites misfortune. Competing racers are discouraged, for beating the girl brings premature age or death. Among the racing songs which accompany is one whose chorus goes, "The breeze coming from her as she runs is beautiful."[19]

Leonard McCombe

In ancient Peru another puberty ceremony, for boys, involved races. Chroniclers writing after the Spanish Conquest of the Inca mention the *waracikoy*, a ritual involving a run down a 2000-foot hill just outside the capital city of Cuzco. The perilous course often injured runners; at the finishing line they were greeted by young noblewomen bearing maize beer.[66]

Painted Papago racer in 1925. Arizona State Museum

participants have been training for years, occur during a week-long trek to the westward ocean to collect salt. Shortly after arrival, the pilgrims begin running twenty miles to a headland and back, straining for a life-guiding vision. These runs are so arduous that men have been said to die from them. Anthropologist Ruth Underhill reported that when one runner saw white cranes ahead, they appeared to him like men setting the pace; his fate was to be a great kick-ball racer.

Maricopa: Track Magic

A Maricopa racer told what happened to him. He was ahead of the Pima racer. Every time the latter came abreast of him, the Pima racer breathed hard. Then the Maricopa felt out of breath, as though his chest would burst, although he had not run far. A Pima bystander laid a switch lightly against the small of this Maricopa's back. It felt as big as a log: he could hardly move. Then the Pima on horses rode with their runner, while the Maricopa runner, trailing behind him, just walked along. When the others saw this, a Maricopa shaman spurred up and switched him twice with a rope, whereon he found he could burst into top speed. The Pima were so sure that they were winning that they started to take the Maricopa stakes, when the Maricopa runner dashed up and won the race.[69]

Another saw a mountain before him slowly revolving; he made up songs about it which won him prominence in the skipping dance. A vision could be as dramatic as that which appeared to one pilgrim who, while running heard a voice calling out: "The sea shaman wants to see you." He disappeared and for the next four years lived in a cave learning sacred songs. By the time he returned home, he had been given up for dead; his property had been destroyed after his funeral. But the running vision made him a sought-after medicine man, and he earned back all his losses.[82]

Inter-Tribal Competition

While most Indian running events contained some symbolic elements, tribes took no less delight in raw competition. The Missisauga of Ontario and the nearby Iroquoian tribes of upper New York State relished inter-tribal running matches. When the Pima of Arizona, known for their speed, staged kick-ball races against the Maricopa of the Colorado River, their shamans tried to sprinkle a reedfull of water on the Maricopas to "drown" them, or draw lines across their paths so the spell-bound opposition would think they were encountering a deep canyon.[69]

Other matches were simply tests of physical strength. In the early 1860s, a Major John C. Cremony witnessed the mile, half-mile, 300-yard,

Papago Racing Song

Toward the west
songs were sounding.
Excited I rushed forth
I met the bitter wind
and tossed it up like a ball.

To the west
songs were sounding.
Excited I rushed forth.
I met the sun
and tossed it up like a ball.

I came forth running,
I came forth running,
Bearing a cloud on my head,
I came forth running.

I speed up my kickball,
over the flat ground it flies.
Between the spreading branches
it settles down.

The hawk laid out the racetrack,
the hawk laid out the racetrack,
and on it the man won.

Wild the man came here,
wild the man came here,
a hawk's heart he won.[81]

and 100-yard prize races of the Mescalero Apache. He was struck by one beautiful seventeen-year-old girl who easily beat her male competition in the half-mile.[10] The Kwakiutl of the Northwest Coast were ingenious at inventing – besides their regular running and walking race – one-legged hopping heats as well as forward and backward somersault races, from one end of their seaside villages to the other.

The Crow used a 300-yard track, and had a hard time holding back jump-starters, so that most races began a dozen times before they were under way. Just to the west, in present-day North Dakota, the Mandan carefully cleared a three-mile track formed as a giant horseshoe, with starting and finishing posts only a few hundred yards apart. Camp criers announced the race days ahead. The betting in blankets, buffalo robes, quilled shirts and leggings, was complicated because backers of individual racers had to agree on fair stakes. Once all was ready, onlookers thronged inside the curved track. A succession of pairs of barefoot, painted runners would be dispatched until the track was packed. Three heats were necessary before winners might receive the red-painted feathers, tokens of victory to be exchanged for spoils. Then, all plunged into the cool Missouri.[10]

Games

While they were not strictly races, the open-field games of tribes everywhere called for the utmost in running endurance. In the deep south, the Choctaw played two-stick ball on 500-yard long courts. For Canadian tribes, early chroniclers observed goals for the one-stick shinny game – one played by fifty-six tribes of this continent – placed a mile apart on the plains. It may have served as surrogate warfare; the play could last eight hours with no stops or substitutions.[10] Bloodied players had to be carried off the field, some fatally injured. Among the Chinooks, Crees, Chippewas, and Sioux, one hundred men played on each side.

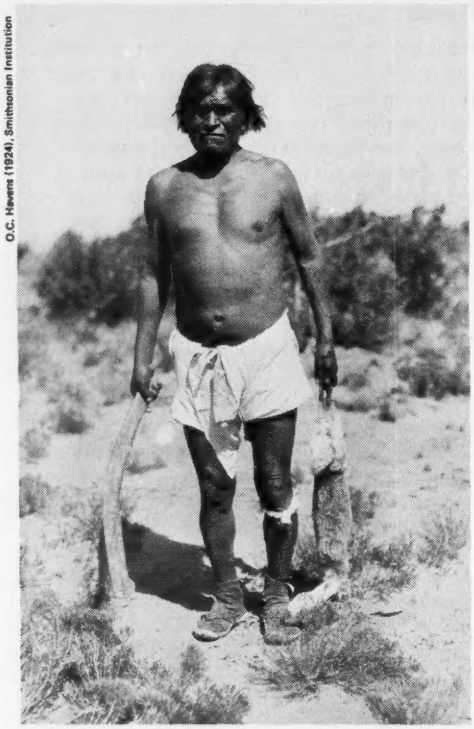
In the early nineteenth century, the artist George Catlin witnessed a Choctaw game with 800 to 1,000 players and about six times that many spectators watching "a scene equal to any of those which ever inspired the hand of the artist in the Olympian games. . ." He noted runners sporting "tails" of white horsehair, while in the north the Sioux wore animal teeth necklaces with red-dyed horsehair "manes" which rippled as they ran.[8]

Elaborate preliminaries included two weeks of intense training, divination, blood-letting, observances of taboos, and huge rallies before the game. Among the Hopi, shinny had some connection to warfare, the sticks probably being vestigial weapons. To the Ponca, the ball – which must never be touched with the hands during the game – was painted to represent the earth. Their teams were the Sky and Earth divisions of the tribe, and

Northern Cheyenne: An Old Man's Pace

The old Chief Little Wolf had been a great runner when he was a young man. The longer the distance the better it suited him. As the Cheyennes and the Ogallalas were traveling together in moving camp there was much bantering such as, "I think the Sioux can travel faster than the Cheyennes can," or, "It appears the the Cheyennes must go a little more slowly in order not to run away from their friends the Sioux." Finally a young Sioux jokingly challenged Little Wolf to a foot race. . . .

The caravan was stopped and arrangements were made for the race. Little Wolf then was past fifty years of age, while his Sioux challenger was just entering young manhood. Nevertheless, the Cheyennes backed their chief heavily. . . . At the crack of a revolver shot the race began. Up to the last mile the young Sioux kept well in the lead. Then he began to move more slowly. It appeared Little Wolf never changed his pace. . . . In the last part of the last mile he went ahead, still running at what appeared to be his same rate while the other man's speed continued to lessen. By a broad hundred yards Little Wolf won the contest. Many of the Sioux, even some who had lost bets, joined the Cheyennes in cheering for the old man.[49]



O.C. Havens (1924), Smithsonian Institution

Fast sprinting ability was necessary in hunting. Hopi chased black-tailed jack rabbits until they got close enough to kill them with curved throwing sticks.

Lame Deer: Too Fast

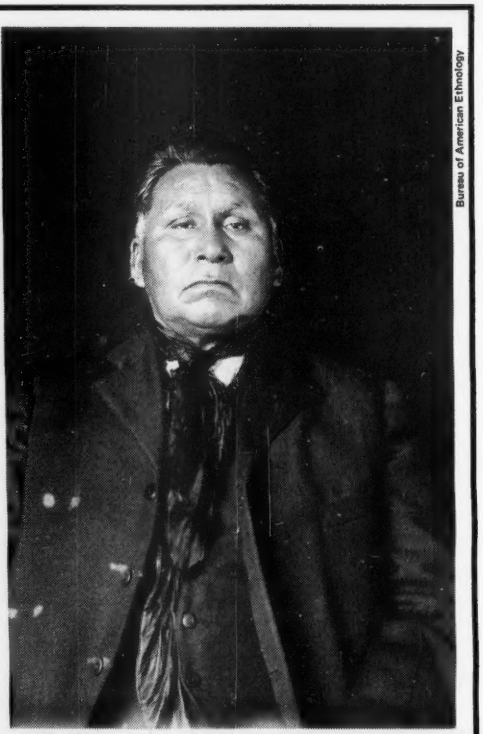
This, you might say, is a modern legend. A man, and what his name was is forgotten now, wanted to hunt a certain kind of gopher. Now, this kind is the fastest animal on earth. The moment you raise your bow or gun, this animal disappears into its gopher hole. Even when hit, even when it is already dead, it still makes a last leap to be swallowed up in its hole. So the man was told by his uncle, "If you want that gopher, shoot real quick and then run, run like hell to catch him before he puts on his vanishing act." The man did as he was told. He saw the gopher. Quick as lightning, he raised his gun and fired. Just as quickly he ran. As he stretched out his hand to catch the gopher, he received a terrific blow in the seat of his pants. He had outrun his own bullet, and it had hit him. From then on, he was known as Swift Runner. He deserved his new name, don't you think?[14]

Those Who Look

Among the semi-nomadic Omaha of the central plains, the *wado'be*, or "those who look" were highly-regarded runners charged with locating buffalo herds and returning with precise information on their whereabouts. Men like I'shibazhi, a runner on the tribe's final hunt, would be among the twenty runners summoned by a specially-delegated hunt leader known as the *watho*, saying: "Come and secure knowledge of the land for me."

When the runners pinpointed the animals' location, they sped back. But instead of charging in with their news, they communicated their success from a promontory by the *waba'ha* signal, one man running from right to left, a second from left to right, crossing each other as they ran. Immediately the Sacred Pole and the White Buffalo Hide were carried to them by the Seven Chiefs. When the hide was thrown over a frame to resemble a buffalo lying down, the first runner would approach and in a low voice relate accurately the herd's size and whereabouts.

After a second runner verified the report, camp would be struck if the animals were far off, otherwise boys began quietly rounding up fast buffalo horses in preparation for a coordinated move. One trick used by these runners was to scan the sky for crows who were known to lead them to buffalo.[17]



Bureau of American Ethnology

I'shibazhi

the game was launched from centerfield where an equal-armed cross traced on the ground stood for the four life-giving winds.[33]

Hunting and Warfare

The importance of running to Indians was probably more deeply rooted in the practical requirements of hunting and warfare than it was in sport or ceremony. To southwestern or Great Basin tribes, running was critical to the success of communal antelope and rabbit drives; the prey would be surrounded out on the desert and chased into V-shaped corrals or half-mile long fiber nets, to be killed by arrow or club. The Tarahumara were famous for killing deer by relentlessly following them for two or more days and nights until the worn-out animal could be strangled by hand, its hooves worn away.[3] They also chased young wild turkeys to take home and domesticate. The Paviotoso Paiute of the Great Basin occasionally ran down antelope the same way, without firing an arrow.

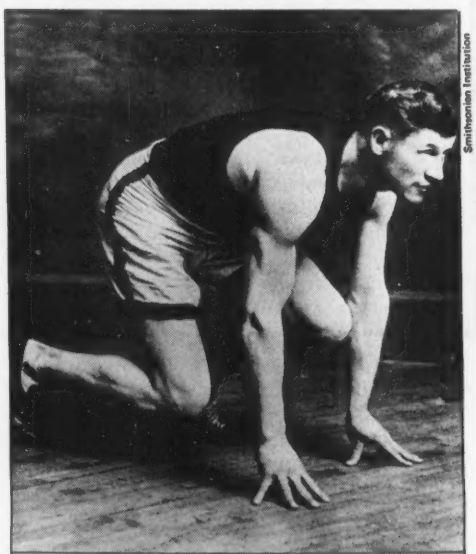
In the days before the horse, Indian warfare depended on nocturnal jogs toward an enemy's camp, surprise attack runs into sleeping camps, and hasty retreats home. Navajo youths were lectured on keeping up their running skills, for if they were captured by an enemy and escaped, "it was a long ways back."[40] Spells played a part here too. Fast Hopis were dispatched to sneak into Navajo hogans and run back with hair combings, finger nail trimmings, and bits of half-eaten food which were buried to render the Navajo helpless in the coming assault.

Runner-couriers were responsible for the incredible timing behind the most successful tribal uprising in Native American history. In early August of 1680, virtually all the Eastern and Western Pueblos of the Southwest rose against one hundred forty years of Spanish oppression. They killed priests and settlers, burned chapels and homes. The entire rebellion was secretly planned by a San Juan medicine man named Popé. Shortly before the target day, his runners took knotted strings to all the pueblos, instructing village chiefs to untie one knot each day until it was time to fight. It is very likely he had a contingency plan in the event of leaked information; the Spanish tortured two runners into confessing that the assault was planned for the 13th. When it struck a few days earlier, the Spanish were caught off guard, and soon all their survivors were clogging escape roads to Mexico.[29]

The Chiricahua Apache preferred making war on foot even after they had access to horses. Geronimo's strategy during his guerilla raids into Mexico was to strike hard and fast, then disperse in separate directions with pre-arranged rendezvous points three days thence. Their scattered escape trails generally stymied pursuing Mexican military or U.S. Cavalry. Geronimo remembered travelling an average of 45 miles a day, carrying three days' rations, staying on the move for 14 hours at a time including meal stops.[1]

Thirty years later, the manhunt for the Paiute outlaw, Willie Boy, in southern California, burst into headlines across America as the "last Indian uprising." Willie Boy led the posse after him on an incredible race for three weeks in the autumn of 1909, running circles around his exhausted, mounted pursuers until, 500 miles later, he was killed. At one point, when horsemen estimated that they were only 20 minutes behind him, they noticed Willie Boy's tracks had lengthened into five-foot strides. For nearly 15 miles he maintained that pace, until the posse had to stop and rest, their horses running sweat.[39]

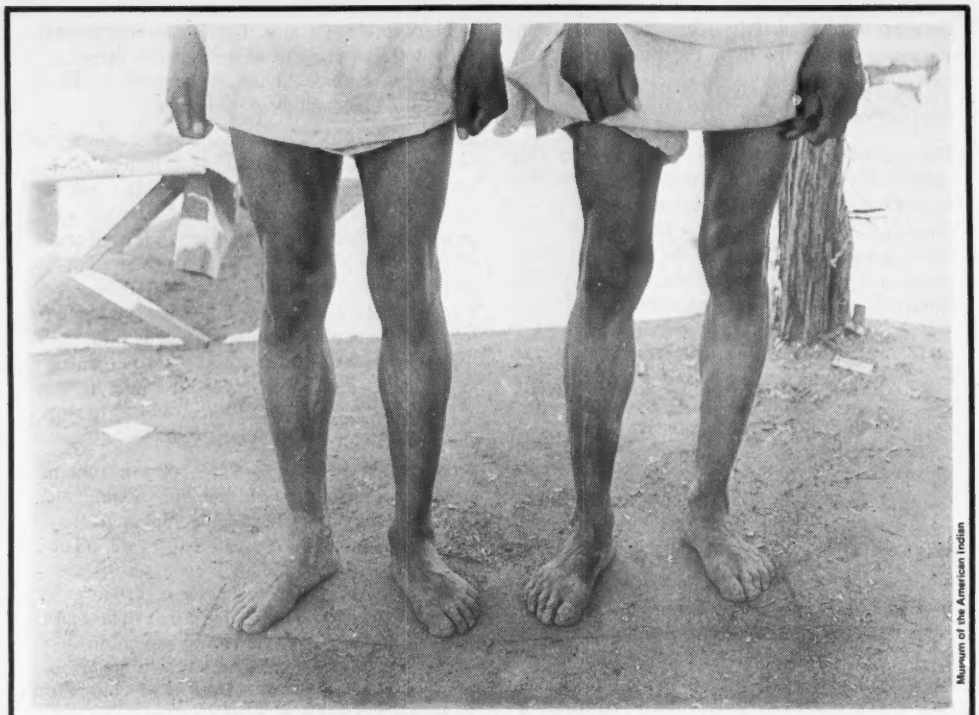
From boyhood through old age, constant running developed Indian men with the kind of endurance which elicited this backhanded compliment from veteran Indian fighter Colonel R.I. Dodge: "The tenacity of life of an Indian, the amount of lead he will carry off, indicates a nervous system so dull as to class him with brutes rather than with man . . . I myself have seen an Indian go off with two bullets through his body, within an inch of his spine, the only effect of which was to cause him to change his gait from a run to a dignified walk."[68]



James Francis Thorpe (1888 - 1953). Three years before he died, Thorpe was named by an Associated Press poll of sportswriters as "the greatest American Athlete of the first half of this century."

In the White Man's Arena

It seems surprising that the Indian's rich and ancient traditions of physical development and



"The feet and legs are well developed, although the muscles are not nearly so large as one would expect to find in a people who run so much as the Zunis do."

Notes on Endurance

In 1924 a Dr. Henry Craig Fleming, attached to the Hendricks-Hodge anthropological expedition, saw for himself the Zuñi kick-stick race. Eight runners had just returned from the grueling 15 - 20 mile run and were bathed in perspiration. When Fleming examined them, he was astonished that they "revealed comparatively no evidence of fatigue, no respiratory distress, and no heart rate above 106 beats per minute." Nor did the runners display any of the characteristic symptoms of the "psychological syndrome of effort": dilated nostrils, breathlessness, stiffness, consciousness of heart beat. On further study of Zuñi health he was amazed at the endurance level of men in their 70s, whose blood pressure was as low as men half as young.[16]

In 1975 journalist James Norman visited the Tarahumara and climbed up to an isolated community named Guagueybo and was passed by a runner who had already gone down the mountain and passed them on the way up. Norman compared their pulse rates: his own was 170, the Tarahumara's, 70.[58]

running in particular do not easily translate into success on the white man's tracks and playing fields. To be sure, there have been remarkable Native American athletes. The Indian's major impact on the sports world arose out of the government boarding school system which began in the nineteenth century as a systematic effort to separate Indian youngsters from their cultural and family ties.

In 1899, the principle promoter of these boarding schools, a former Indian fighter named Colonel Richard Pratt, hired Glenn Scobie "Pop" Warner to work with his Carlisle Indian School athletes. Warner was the prototypical hard-driving, foul-mouthed, intrinsically loveable American coach. Initially, the Indian kids were put off by his profane exhortations and gruff commands, but soon his approach mellowed, perhaps as he saw the possibilities in such promising football players as Isaac Seneca, Hugh Wheelock, and Frank Hudson. Warner's career took an unexpected leap with the arrival on the school's Pennsylvania campus of a sixteen-year-old, part Sauk-Fox, part-Irish boy called James Francis Thorpe, or Wathohuck – "Bright Path" in his own language. Thorpe quickly became the core of Warner's famous "Indian boys." They excelled in every football and track event Carlisle entered until, in 1912, the best of them qualified to compete in the Olympics in Stockholm.[56]

Another gifted athlete had already joined Warner's boys, Louis Tewanima, a Hopi from the same

village as Fred Kabotie. Born around 1879, Tewanima belonged to the Sand Clan, and it is said that as a youth, he would run the 120 miles to Winslow, Arizona and back, barefoot, just to watch the trains pass. Under Warner's tutelage, Louis participated in the 1908 Olympiad in London, where he came in ninth in the 26-mile marathon. At the awards presentation at the 1912 Olympic games, King Gustavus of Sweden dubbed Thorpe "the greatest athlete in the world," for the young man had stunned the world by winning easily the two most demanding track and field events: the pentathalon and the decathalon. Tewanima received the Silver Medal for the 10,000 meter run, and set a record which was not broken until 1964 when another Indian, the Oglala Sioux Billy Mills, did that distance in 28:24:04 at the Tokyo Olympic games. In 1925, Tewanima came in first in the highly-publicized New York to California "Bunion Derby," but was disqualified for an infraction of the rules. One source said that the ease and speed of his run hurt audience support.[11]

However, both Thorpe and Tewanima were less successful at home. Relieved of his Olympic honors for having played semi-professional baseball prior to the games, Thorpe dropped into relative obscurity and died in 1953. Twenty years later, the Amateur Athletic Union restored his awards in the Olympic books. And according to Fred Kabotie, Tewanima's performance at a home-state racing event proved to be a more profound contest between native and white styles of training.

"I knew him, he was to take part in a marathon on the Fourth of July. My uncle and I rode there on burros. We camped at night on the way. We were in the Winslow grandstand and there was Louis – and about three other Hopi runners – not Carlisle students – and Zuñi runners with animal fetishes, supposed to give them strength, held in their hands the whole race. When they started, Louis was out in front by a long stretch. About the third round, the Hopi runners pass him up, then the Zuñis pass him up. He didn't even finish. It turned out Pop Warner's training didn't do any good against those Hopi runners."

In the 1920s, there was a flurry of interest in importing Mexico's Tarahumara runners to compete in international meets. Their performance was impressive:

1927 Two Tarahumara ran the 89.4 miles from San Antonio to Austin, Texas, in 14 hours, 53 minutes.[18]

1927 Jose Torres, a Tarahumara, broke an 1882 world record when he covered the 51 miles from Kansas City to Lawrence in 6:46:41.[18]

1928 At the Amsterdam Olympics, four Tarahumaras represented Mexico, and failed to come in first because they had paced themselves for the distances of home, not realizing that the race was over at the twenty-five mile mark. They complained, "Too short, too short."[44]

But it seemed that the Tarahumara, as well as other Indian tribes, found it difficult to take running out of their cultural context, and reshape it to meet the white man's criteria for competitive

Wm. H. Simpson, Museum of New Mexico

Hopi runner, 1901

Arlo Nuvayouma, Museum of the American Indian

A Hopi racer belonging to the Bear Clan can be recognized while competing against other clansmen by the black claw against light blue body paint. At the close of the race they go to the houses of their aunts for refreshing water.

sports. According to Michael Jenkinson, their metabolism could not make the adjustment from a regular diet of corn gruel to a training regimen of eggs, milk and beefsteak. Runners had bad dreams at night; running in endless circles bored them; the terrifying scrutiny of howling spectators contrasted with the long quiet stretches of mountain running at home. Finally, the cleated leather shoes required at Olympic meets did not conform to their splayed, bark-hard feet.[35]

For the Pueblo runners, the single-minded emphasis on victory meant that winners outside of their communities often became losers within. Acoma Indian runner Gary Louis explained to **Sports Illustrated** that, "Some of our people get kind of jealous of anybody who's really achieving something. They cut you down a lot. . . . I've thought a lot about why Indian athletes don't go on. There's Jim Thorpe and Billy Mills, period. Indians make a name for themselves in high school, and the next thing you know they're pumping gas."[21]

It is a phenomenon of American cultural history that whites and Indians are continually rediscovering not their commonality, but the depth of the cultural chasm between them. Running, to tribespeople, never filled any exclusive cultural function. It was inextricably embedded in customs and necessities of survival, reinforced by traditional attitudes and beliefs. Indians ran on their own terms, just as they worked, worshipped, played, raised families, and organized communities. They still do, so it is no wonder there remains a force against running on foreign terms.

A Plan for the Summer

A major race will be run this summer exclusively on Indian terms, to commemorate the tricentennial anniversary of the most important Indian-white clash in southwestern history: the 1680 victory of the allied pueblos over the Spanish. The race will feature relay runners stationed along backroads from Taos Pueblo, in northern New Mexico, probably down to Zuni, south of Gallup, and then up to the Hopi mesas – well over 300 miles.

The runners will span the varied cultural territories of the Anglo, the Spanish-American, the Apache, and the Navajo as they pass along the knotted-string messages which originally signalled the eruption of the Pueblo Revolt. Kabotie and his fellow Hopi planners are researching routes and times.

"The Rebellion took place on the same day. In my village of Shungopovi, they killed the priest and his associates, as at Oraibi and Awatowi. Somebody must have brought in the knotted strings, but nobody remembers, there aren't any legends."

Like Popé in Taos planning the logistics of the rebellion three centuries ago, Kabotie and his task force are quietly meeting with other Pueblo leaders. "We are working it out," he said, "so that day in August the runner who carries the knotted string can come into the Hopi villages on time." ■

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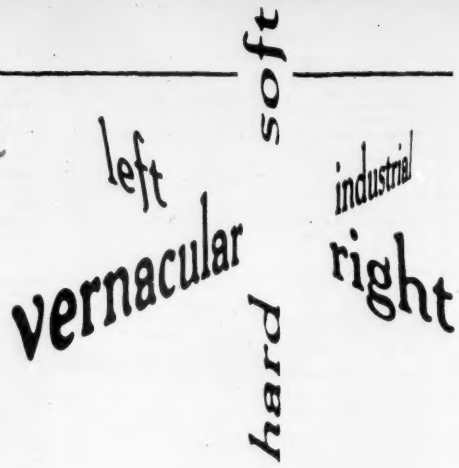
VERNACULAR VALUES



by Ivan Illich

Cuernavaca, April 12th 1980

Dear Stewart,

Three years ago you asked, what had become of my plan to write an epilogue to the industrial age. Indeed, that is what I had promised in 1973 in the introduction to ***Tools for Conviviality:***

> During the next several years I intend to work on an epilogue to the industrial age. I want to trace the changes in language, myth, ritual and law which took place in the current epoch of packaging and of schooling. I want to describe the fading monopoly of the industrial mode of production and the vanishing of the industrially generated professions this mode of production serves.
>
> Above all I want to show that two-thirds of mankind still can avoid passing through the industrial age, by choosing right now a postindustrial balance in their mode of production which the hyper-industrial nations will be forced to adopt as an alternative to chaos. To prepare for this task I submit this essay for critical comment.

The comments came. The readings which came with them led me in many directions I had never intended to go. To grapple with them, and to deepen my understanding of this late industrial age, I focused successively on ***Energy and Equity, Medical Nemesis*** *and* ***Disabling Professions.*** *These were prolegomena towards a* ***History of Needs*** *that remains to be done. I am now back to the study of history, the study of popular cultures, mentalities, practices and tools all too often overshadowed by the history of ideas, institutions and dominant styles. The promised epilogue is taking shape in a dozen essays on the fate of Vernacular Values during the last five hundred years of warfare that has been waged by the modern State against all forms of Subsistence.*

At your invitation I am sending you the drafts for a couple of these essays. Thank you for accepting them in ***CoEvolution Quarterly.*** *I guess that, in 1980, through no other Journal I could reach a comparable motley readership of unusual critics. For those who would like to use my drafts as outlines for study I shall prepare within a few months an annotated guide to the relevant bibliography distributed by Valentina Borremans, Tecno-Politica, APD 479, Cuernavaca, Morelos, Mexico.*

yours,
Ivan

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NB2. I shall polish these drafts and publish them with several other essays in a book to be called ***Vernacular Values*** *which Marion Boyars (18 Brewer Street, London W 1 and 99 Main Street, Salem, New Hampshire 03079) wlll bring out. She therefore is arranging for the copyright. I have told her that I wish to give to you the right to one time and first English language publication of these drafts.*

We need a simple adjective to name those acts of competence, lust, or concern that we want to defend from measurement or manipulation by Chicago Boys and Socialist Commissars. The term must be broad enough to fit the preparation of food and the shaping of language, childbirth, and recreation, without implying either a privatized activity akin to the housework of modern women, a hobby or an irrational and primitive procedure. Such an adjective is not at hand. But "vernacular" might serve.

1ST PART
THE THREE DIMENSIONS OF SOCIAL CHOICE

Where the war against subsistence has led can best be seen in the mirror of so-called development. During the 1960's, "development" acquired a status that ranked with "freedom" and "equality". Other peoples' development became the rich man's duty and burden. Development was described as a building program – people of all colors spoke of "nation-building" and did so without blushing. The immediate goal of this social engineering was the installation of a balanced set of equipment in a society not yet so instrumented: the building of more schools, more modern hospitals, more extensive highways, new factories, power grids, together with the creation of a population trained to staff and need them.

Today, the moral imperative of ten years ago appears naive; today, few critical thinkers would take such an instrumentalist view of the desirable society. Two reasons have changed many minds: First, undesired externalities exceed benefits – the tax burden of schools and hospitals is more than any economy can support; the ghost towns produced by highways impoverish the urban and rural landscape. Plastic buckets from Saõ Paulo are lighter and cheaper than those made of scrap by the local tinsmith in Western Brazil. But first cheap plastic puts the tinsmith out of existence, and then the fumes of plastic leave a special trace on the environment – a new kind of ghost. The destruction of age-old competence as well as these poisons are inevitable byproducts and will resist all exorcisms for a long time. Cemeteries for industrial wastes simply cost too much, more than the buckets are worth. In economic jargon, the "external costs" exceed not only the profit made from plastic bucket production, but also the very salaries paid in the manufacturing process.

These rising externalities, however, are only one side of the bill which development has exacted. Counterproductivity is its reverse side. Externalities represent costs that are "outside" the price paid by the consumer for what he wants – costs that he, others or future generations will at some point be charged. Counterproductivity, however, is a new kind of disappointment which arises "within" the very use of the good purchased. This internal counterproductivity, an inevitable component of modern institutions, has become the constant frustration of the poorer majority of each institution's clients: intensely experienced but rarely defined. Each major sector of the economy produces its own unique and paradoxical contradictions. Each necessarily effects the opposite of that for which it was structured. Economists, who are increasingly competent to put price-tags on externalities, are unable to deal with negative internalities, and cannot measure the inherent frustration of captive clients which is something other than a cost. For most people, schooling twists genetic differences into certified degradation; the medicalization of health increases demand for services far beyond the possible and useful, and undermines that organic coping ability which common sense calls health; transportation, for the great majority bound to the rush hour, increases the time spent in the servitude to traffic, reducing both freely chosen mobility and mutual access. The development of educational, medical and other welfare agencies has actually removed most clients from the obvious purpose for which these projects were designed and financed. This institutionalized frustration, resulting from

compulsory consumption, combines with the new externalities. It demands an increase in the production of scavenging and repair services to impoverish and even destroy individuals and communities, affecting them in a class-specific manner. In effect, the peculiarly modern forms of frustration and paralysis and destruction totally discredit the description of the desirable society in terms of installed production capacity.

Defense against the damages inflicted by development, rather than access to some new "satisfaction", has become the most sought after privilege. You have arrived if you can commute outside the rush hour; probably attended an elite school; if you can give birth at home; are privy to rare and special knowledge if you can bypass the physician when you are ill; are rich and lucky if you can breathe fresh air; by no means poor, if you can build your own shack. The underclasses are now made up of those who must consume the counterproductive packages and ministrations of their self-appointed tutors; the privileged are those who are free to refuse them. A new attitude, then, has taken shape during these last years: the awareness that we cannot ecologically afford equitable development leads many to understand that, even if development in equity were possible, we would neither want more of it for ourselves, nor want to suggest it for others.

Ten years ago, we tended to distinguish social options exercised within the political sphere from technical options assigned to the expert. The former were meant to focus on goals, the latter more on means. Roughly, options about the desirable society were ranged on a spectrum that ran from right to left: here, capitalist, over there, socialist "development". The how was left to the experts. This one-dimensional model of politics is now passé. Today, in addition to "who gets what", two new areas of choice have become lay issues: the very legitimacy of lay judgment on the apt means for production, and the trade-offs between growth and freedom. As a result, three independent classes of options appear as three mutually perpendicular axes of public choice. On the x-axis I place the issues related to social hierarchy, political authority, ownership of the means of production and allocation of resources that are usually designated by the terms, right and left. On the y-axis, I place the technical choices between hard and soft, extending these terms far beyond a pro and con atomic power: not only goods, but also services are affected by the hard and soft alternatives.

A third choice falls on the z-axis. Neither privilege nor technique, but rather the nature of human satisfaction is at issue. To characterize the two extremes, I shall use terms defined by Erich Fromm. At the bottom, I place a social organization that fits the seeking of satisfaction in having; at the top, in doing. At the bottom, therefore, I place a commodity-intensive society where needs are increasingly defined in terms of packaged goods and services designed and prescribed by professionals, and produced under their control. This social ideal corresponds to the image of a humanity composed of individuals, each driven by considerations of marginal utility, the image that has developed from Mandeville via Smith and Marx to Keynes, and that Louis Dumont calls *homo economicus*. At the opposite end, at the top of the z-axis, I place – in a fan-shaped array – a great variety of societies where existence is organized around subsistence activities. In its unique way, each of these cannot but be skeptical about the claims of growth. In such new societies where contemporary tools ease the creation of use-values, commodities and industrial production in general are deemed valuable mainly insofar as they are either resources or instruments for subsistence. Hence, the social ideal corresponds to *homo habilis*, an image which includes numerous individuals who are differently competent at coping with reality, the opposite of *homo economicus*, who is dependent on standardized "needs". Here, people who choose their independence and their own horizon derive more satisfaction from doing and making things for immediate use than from the products of slaves or machines. Therefore, every cultural project is necessarily modest. Here, people go as far as they can toward self-subsistence, they themselves producing what they are able, exchanging their surplus with neighbors, avoiding – insofar as possible – the products of wage labor.

The shape of contemporary society is the result of the ongoing choices along these three independent axes. And a polity's credibility today depends on the degree of public participation in each of the three option sets. The beauty of a unique, socially articulated image of each society will, hopefully, become the determining factor of its international impact. Esthetic and ethical example may replace the competition of economic indicators. Actually, no other route is open. A mode of life characterized by austerity, modesty, constructed by hard work and built on a small scale does not lend itself to propagation through marketing. For the first time in history, poor and rich societies would be effectively placed on equal terms. But for this to become true, the present perception of international north-south relations in terms of development must first be superseded.

A related high status goal of our age, full employment, must also be reviewed. Ten years ago, attitudes toward development and politics were simpler than what is possible today; attitudes toward work were sexist and naive. Work was identified with employment, and prestigious employment confined to males. The analysis of shadow work done off the job was tabu. The

left referred to it as a remnant of primitive reproduction, the right, as organized consumption – all agreed that, with development, such labor would wither away. The struggle for more jobs, for equal pay for equal jobs, and more pay for every job pushed all work done off the job into a shadowed corner hidden from politics and economics. Recently, feminists, together with some economists and sociologists, looking at so-called intermediary structures, have begun to examine the unpaid contribution made to an industrial economy, a contribution for which women are principally responsible. These persons discuss "reproduction" as the complement to production. But the stage is mostly filled with self-styled radicals who discuss new ways of creating conventional jobs, new forms of sharing available jobs and how to transform housework, education, childbearing and commuting into paid jobs. Under the pressure of such demands, the full employment goal appears as dubious as development. New actors, who question the very nature of work, advance toward the limelight. They distinguish industrially structured work, paid or unpaid, from the creation of a livelihood beyond the confines of employment and professional tutors. Their discussions raise the key issues on the vertical axis. The choice for or against the notion of man as a growth addict decides whether unemployment, that is, the effective liberty to work free from wages and/or salary, shall be viewed as sad and a curse, or as useful and a right.

In a commodity-intensive society, basic needs are met through the products of wage-labor – housing no less than education, traffic no less than the delivery of infants. The work ethic which drives such a society legitimates employment for salary or wages and degrades independent coping. But the spread of wage-labor accomplishes more – it divides unpaid work into two opposite types of activities. While the loss of unpaid work through the encroachment of wage-labor has often been described, the creation of a new kind of work has been consistently ignored: the unpaid complement of industrial labor and services. A kind of forced labor or industrial serfdom in the service of commodity-intensive economies must be carefully distinguished from subsistence-oriented work lying outside the industrial system. Unless this distinction is clarified and used when choosing options on the z-axis, unpaid work guided by professionals could spread through a repressive, ecological welfare society. Women's serfdom in the domestic sphere is the most obvious example today. Housework is not salaried. Nor is it a subsistence activity in the sense that most of the work done by women was such as when, with their menfolk, they used the entire household as the setting and the means for the creation of most of the inhabitants' livelihood. Modern housework is standardized by industrial commodities oriented towards the support of production, and exacted from women in a sex-specific way to press them into reproduction, regeneration and a motivating force for the wage-laborer. Well publicized by feminists, housework is only one expression of that extensive shadow economy which has developed everywhere in industrial societies as a necessary complement to expanding wage-labor. This shadow complement, together with the formal economy, is a constitutive element of the industrial mode of production. It has escaped economic analysis, as the wave nature of elementary particles before the Quantum Theory. And when concepts developed for the formal economic sector are applied to it, they distort what they do not simply miss. The real difference between two kinds of unpaid activity – shadow-work which complements wage-labor, and subsistence work which competes with and opposes both – is consistently missed. Then, as subsistence activities become more rare, all unpaid activities assume a structure analogous to housework. Growth-oriented work inevitably leads to the standardization and management of activities, be they paid or unpaid.

A contrary view of work prevails when a community chooses a subsistence-oriented way of life. There, the inversion of development, the replacement of consumer goods by personal action, of industrial tools by convivial tools is the goal. There, both wage-labor and shadow-work will decline since their product, goods or services, is valued primarily as a means for ever inventive activities, rather than as an end, that is, dutiful consumption. There, the guitar is valued over the record, the library over the schoolroom, the back yard garden over the supermarket selection. There, the personal control of each worker over his means of production determines the small horizon of each enterprise, a horizon which is a necessary condition for social production and the unfolding of each worker's individuality. This mode of production also exists in slavery, serfdom and other forms of dependence. But it flourishes, releases its energy, acquires its adequate and classical form only where the worker is the free owner of his tools and resources; only then can the artisan perform like a virtuoso. This mode of production can be maintained only within the limits that nature dictates to both production and society. There, useful unemployment is valued while wage-labor, within limits, is merely tolerated.

The development paradigm is more easily repudiated by those who were adults on January 10, 1949. That day, most of us met the term in its present meaning for the first time when President Truman announced his Point Four Program. Until then, we used "development" to refer to species, real estate and moves in chess – only thereafter to people, countries and economic

strategies. Since then, we have been flooded by development theories whose concepts are now curiosities for collectors – "growth", "catching up", "modernization", "imperialism", "dualism", "dependency", "basic needs", "transfer of technology", "world system", "autochthonous industrialization" and "temporary unlinking". Each onrush came in two waves. One carried the pragmatist who highlighted free enterprise and world markets; the other, the politicians who stressed ideology and revolution. Theorists produced mountains of prescriptions and mutual caricatures. Beneath these, the common assumptions of all were buried. Now is the time to dig out the axioms hidden in the idea of development itself.

Fundamentally, the concept implies the replacement of general competence and satisfying subsistence activities by the use and consumption of commodities; the monopoly of wage-labor over all other kinds of work; redefinition of needs in terms of goods and services mass-produced according to expert design; finally, the rearrangement of the environment in such fashion that space, time, materials and design favor production and consumption while they degrade or paralyze use-value oriented activities that satisfy needs directly. And all such worldwide homogeneous changes and processes are valued as inevitable and good. The great Mexican muralists dramatically portrayed the typical figures before the theorists outlined the stages. On their walls, one sees the ideal type of human being as the male in overalls behind a machine or in a white coat over a microscope. He tunnels mountains, guides tractors, fuels smoking chimneys. Women give him birth, nurse and teach him. In striking contrast to Aztec subsistence, Rivera and Orozco visualize industrial work as the sole source of all the goods needed for life and its possible pleasures.

But this ideal of industrial man now dims. The tabus that protected it weaken. Slogans about the dignity and joy of wage-labor sound tinny. Unemployment, a term first introduced in 1898 to designate people without a fixed income, is now recognized as the condition in which most of the world's people live anyway – even at the height of industrial booms. In Eastern Europe especially, but also in China, people now see that, since 1950, the term, "working class", has been used mainly as a cover to claim and obtain privileges for a new bourgeoisie and its children. The "need" to create employment and stimulate growth, by which the self-appointed paladins of the poorest have so far squashed any consideration of alternatives to development, clearly appears suspect.

The challenges to development take multiple forms. In Germany alone, France or Italy, thousands of groups experiment, each differently, with alternatives to an industrial existence. Increasingly, more of these people come from blue-collar homes. For most of them, there is no dignity left in earning one's livelihood by a wage. They try to "unplug themselves from consumption", in the phrase of some South Chicago slum-dwellers. In the USA, at least four million people live in the core of tiny and highly differentiated communities of this kind, with at least seven times as many individually sharing their values – women seek alternatives to gynecology; parents alternatives to schools; home-builders alternatives to the flush toilet; neighborhoods alternatives to commuting; people alternatives to the shopping center. In Trivandrum, South India, I have seen one of the most successful alternatives to a special kind of commodity dependence – to instruction and certification as the privileged forms of learning. One thousand seven hundred villages have installed libraries, each containing at least a thousand titles. This is the minimum equipment they need to be full members of Kerala Shastra Sahitya Parishad, and they may retain their membership only as long as they loan at least three thousand volumes per year. I was immensely encouraged to see that, at least in South India, village-based and village-financed libraries have turned schools into adjuncts to libraries, while elsewhere libraries during these last ten years have become mere deposits for teaching materials used under the instruction of professional teachers. Also in Bihar, India, Medico International represents a grassroots-based attempt to de-medicalize health care, without falling into the trap of the Chinese barefooted doctor. The latter has been relegated to the lowest level lackey in a national hierarchy of bio-control.

Besides taking such experiential forms, the challenge to development also uses legal and political means. In an Austrian referendum last year, an absolute majority refused permission to Chancellor Kreisky, politically in control of the electorate, to inaugurate a finished atomic generator. Citizens increasingly use the ballot and the courts, in addition to more traditional interest group pressures, to set negative design criteria for the technology of production. In Europe, "green" candidates begin to win elections. In America, citizen legal efforts begin to stop highways and dams. Such behavior was not predictable ten years ago – and many men in power still do not recognize it as legitimate. All these grassroots-organized lives and actions in the Metropolis challenge not only the recent concept of overseas development, but also the more fundamental and root concept of progress at home.

At this juncture, it is the task of the historian and the philosopher to clarify the sources of and disentangle the process resulting in Western needs. Only thus shall we be able to understand how such a seemingly enlightened concept produced

The popular call for soft is ambiguous...it equally serves a honied beehive, or the pluralism of independent actions.

such devastating exploitation. Progress, the notion which has characterized the West for 2000 years, and has determined its relations to outsiders since the decay of classical Rome, lies behind the belief in needs. Societies mirror themselves not only in their transcendent gods, but also in their image of the alien beyond their frontiers. The West exported a dichotomy between "us" and "them" unique to industrial society. This peculiar attitude towards self and others is now worldwide, constituting the victory of a universalist mission initiated in Europe. A redefinition of development would only reinforce the Western economic domination over the shape of formal economics by the professional colonization of the informal sector, domestic and foreign. To eschew this danger, the six-stage metamorphosis of a concept that currently appears as "development" must first be understood.

Every community has a characteristic attitude towards others. The Chinese, for example, cannot refer to the alien or his chattel without labeling them with a degrading marker. For the Greek, he is either the house guest from a neighboring polis, or the barbarian who is less than fully man. In Rome, barbarians could become members of the city, but to bring them into it was never the intent or mission of Rome. Only during late antiquity, with the Western European Church, did the alien become someone in need, someone to be brought in. This view of the alien as a burden has become consititutive for Western society; without this universal mission to the world outside, what we call the West would not have come to be.

The perception of the outsider as someone who must be helped has taken on successive forms. In late antiquity, the barbarian mutated into the pagan – the second stage toward development had begun. The pagan was defined as the unbaptized, but ordained by nature to become Christian. It was the duty of those within the Church to incorporate him by baptism into the body of Christendom. In the early Middle Ages, most people in Europe were baptized, even though they might not yet be converted. Then the Muslim appeared. Unlike Goths and Saxons, Muslims were monotheists, and obviously prayerful believers; they resisted conversion. Therefore, besides baptism, the further needs to be subjected and instructed had to be imputed. The pagan mutated into the infidel, our third stage. By the late Middle Ages, the image of the alien mutated again. The Moors had been driven from Granada, Columbus had sailed across the ocean, and the Spanish Crown had assumed many functions of the Church. The image of the wild man who threatens the civilizing function of the humanist replaced the image of the infidel who threatens the faith. At this time also, the alien was first described in economy-related terms. From many studies on monsters, apes and wild men, we learn that the Europeans of this period saw the wild man as having no needs. This independence made him noble, but a threat to the designs of colonialism and mercantilism. To impute needs to the wild man, one had to make him over into the native, the fifth stage. Spanish courts, after long deliberation, decided that at least the wild man of the New World had a soul and was, therefore, human. In opposition to the wild man, the native has needs, but needs unlike those of civilized man. His needs are fixed by climate, race, religion and providence. Adam Smith still reflects on the elasticity of native needs. As Gunnar Myrdal has observed, the construct of distinctly native needs was necessary both to justify colonialism and to administer colonies. The provision of government, education and commerce for the natives was for four hundred years the white man's assumed burden.

Each time the West put a new mask on the alien, the old one was discarded because it was now recognized as a caricature of an abandoned self-image. The pagan with his naturally Christian soul had to give way to the stubborn infidel to allow Christendom to launch the Crusades. The wild man became necessary to justify the need for secular humanist education. The native was the crucial concept to promote self-righteous colonial rule. But by the time of the Marshall Plan, when multinational conglomerates were expanding and the ambitions of transnational pedagogues, therapists and planners knew no bounds, the natives' limited needs for goods and services thwarted growth and progress. They had to metamorphose into underdeveloped people, the sixth and present stage of the West's view of the outsider. Thus decolonization was also a process of conversion: the worldwide acceptance of the Western self-image of *homo economicus* in his most extreme form as *homo industrialis*, with all needs commodity-defined. Scarcely twenty years were enough to make two billion people define themselves as underdeveloped. I vividly remember the Rio Carnival of 1963 – the last before the Junta imposed itself. "Development" was the motif in the prize-winning samba, "development" the shout of the dancers while they jumped to the throbbing of the drums.

Development based on high per capita energy quanta and intense professional care is the most

pernicious of the West's missionary efforts – a project guided by an ecologically unfeasible conception of human control over nature, and by an anthropologically vicious attempt to replace the nests and snakepits of culture by sterile wards for professional service. The hospitals that spew out the newborn and reabsorb the dying, the schools run to busy the unemployed before, between and after jobs, the apartment towers where people are stored between trips to the supermarkets, the highways connecting garages form a pattern tatooed into the landscape during the short development spree. These institutions, designed for lifelong bottle babies wheeled from medical center to school to office to stadium begin now to look as anomalous as cathedrals, albeit unredeemed by any esthetic charm.

Ecological and anthropological realism are now necessary – but with caution. The popular call for soft is ambiguous; both right and left appropriate it. On the z-axis, it equally serves a honied beehive, or the pluralism of independent actions. The soft choice easily permits a recasting of a maternal society at home and another metamorphosis of missionary zeal abroad. For example, Amory Lovins argues that the possibility of further growth now depends on a rapid transition to the soft path. Only in this way, he claims, can the real income of rich countries double and that of poor countries triple in this generation. Only by the transition from fossil to sun can the externalities of production be so cut that the resources now spent on making waste and hiring scavengers to remove it be turned into benefits. I agree. If growth is to be, then Lovins is right; and investments are more secure with windspinners than with oil derricks. For the traditional right and left, for managerial democrats or socialist authoritarians, soft process and energy become the necessary rationale to expand their bureaucracies and to satisfy escalating "needs" through the standardized production of goods and services.

The World Bank makes the matching argument for services. Only by choosing labor-intensive, sometimes less efficient forms of industrial production can education be incorporated in apprenticeship. More efficient plants create huge and costly externalities in the formal education they presuppose, while they cannot teach on the job.

The World Health Organization now stresses prevention and education for self care. Only thus can population health levels be raised, while expensive therapies – mostly of unproven effectiveness, although still the principal work of physicians – can be abandoned. The liberal egalitarian utopia of the 18th century, taken up as the ideal for industrial society by the socialists of the 19th, now seems realizable only on the soft and self-help path. On this point, right and left converge. Wolfgang Harich, a highly cultured communist, refined and steeled in his convictions by two stretches of eight years in solitary confinement – once under Hitler and once under Ulbricht – is the one East European spokesman for the soft path. But while for Lovins the transition to decentralized production depends on the market, for Harich the necessity of this transition is an argument in favor of Stalinist ecology. For right and left, democrats or authoritarians, soft process and energy become the necessary means to satisfy escalating "needs" through the standardized production of goods and services.

Thus, the soft path can lead either towards a convivial society where people are so equipped to do on their own whatever they judge necessary for survival and pleasure, or towards a new kind of commodity-dependent society where the goal of full employment means the political management of activities, paid or unpaid. Whether a "left" or "soft" path leads towards or away from new forms of "development" and "full employment" depends on the options taken between "having" and "being" on the third axis.

We have seen that wherever wage-labor expands, its shadow, industrial serfdom, also grows. Wage-labor, as the dominant form of production, and housework, as the ideal type of its unpaid complement, are both forms of activity without precedent in history or anthropology. They thrive only where the absolute and, later, the industrial state destroyed the social conditions for subsistence living. They spread as small-scale, diversified, vernacular communities have been made sociologically and legally impossible – into a world where individuals, throughout their lives, live only through dependence on education, health services, transportation and other packages provided through the multiple mechanical feeders of industrial institutions.

Conventional economic analysis has focused on only one of these complementary industrial age activities. Economic analysis has focused on the worker as wage-earning producer. The equally commodity-oriented activities performed by the unemployed have remained in the shadow of the economic searchlight. What women or children do, what occupies men after "working hours", is belittled in a cavalier fashion. But this is changing rapidly. Both the weight and the nature of the contribution made by unpaid activities to the industrial system begin to be noticed. Feminist research into the history and anthropology of work has made it impossible to ignore the fact that work in an industrial society is sex-specific in a manner which cuts deeper than in any other known society. In the 19th century, women entered the wage-labor force in the "advanced"nations; they then won the franchise, non-restricted access to schooling, equal rights on

The tension and balance between vernacular work and industrial labor - paid and unpaid - is the key issue on the third dimension of options, distinct from political right and left and from technical soft and hard.

the job. All these "victories" have had precisely the opposite effect from that which conventional wisdom assigns them. Paradoxically, "emancipation" has heightened the contrast between paid and unpaid work; it has severed all connections between unpaid work and subsistence. Thus, it has redefined the structure of unpaid work so that this latter becomes a new kind of serfdom inevitably borne by women.

Gender-specific tasks are not new; all known societies assign sex-specific work roles. For example, hay may be cut by men, raked by women, gathered by men, loaded by women, carted away by men, fed to cows by women and to horses by men. But no matter how much we search other cultures, we cannot find the contemporary division between two forms of work, one paid and the other unpaid, one credited as productive and the other as concerned with reproduction and consumption, one considered heavy and the other light, one demanding special qualifications and the other not, one given high social prestige and the other relegated to "private" matters. Both are equally fundamental in the industrial mode of production. They differ in that the surplus from paid work is taxed directly by the employer, while the added value of unpaid work reaches him only via wage-work. Nowhere can we find two such distinct forms through which, in each family, surplus is created and expropriated.

This division between unpaid work off the job and paid work through employment would have been unthinkable in societies where the whole house served as a framework in which its inhabitants, to a large extent, did and made those things by which they also lived. Although we can find traces of both wage-work and its shadow in many societies, in none could either become the society's paradigm of work, nor be used as the key symbol for sex-specific tasks. And since two such types of work did not exist, the family did not have to exist to couple these kinds of opposites. Nowhere in history is the family, nuclear or extended, the instrument for linking two complementary but mutually exclusive species of work, one assigned primarily to the male, the other to the female. This symbiosis between opposite forms of activity, inseparably wedded through the family, is unique to commodity-intensive society. We now see that it is the inevitable result of the pursuit of development and full employment. And since such kinds of work did not exist, sex-roles could not be defined with such finality, distinct natures could not be attributed to male and female, families could not be transformed into a solder to weld the two together.

A feminist analysis of the history of industrial work thus removes the blindspot of economics: *homo economicus* has never been sexually neutral; *homo industrialis* appeared from the beginning in two genders: *vir laborans*, the workingman, and *femina domestica*, the hausfrau. In no society that developed toward the goal of full employment has shadow-work not grown apace with that employment. And shadow-work provided a device, effective beyond every precedent, to degrade a type of activity in which women cannot but predominate, while it supported one which privileged men.

Quite recently, the orthodox distinction between production and consumption functions ceased to hold. Suddenly, opposing interests turn the importance of unpaid work into a public issue. Economists put shadow prices on what happens in the "informal" sector: S. – the contribution that the work done by the client in choosing, paying for and carrying his cake adds to the value of the cake; G.B. – the calculus of marginal choices made in sexual activities; L. – the value of jogging over heart surgery.

Housewives claim pay for housework at the rate for such services in motels and restaurants. Teachers transmogrify mothers into trained but unpaid supervisors of their own children's homework. Government reports recognize that basic needs as professionally defined can be met only if laymen also produce these services, with competence but without pay. If growth and full employment retain their status as goals, the management of disciplined people motivated by non-monetary rewards will open up as the latest form of "development" in the 1980's.

Rather than life in a shadow economy, I propose, on top of the z axis, the ideas of vernacular work: unpaid activities which provide and improve livelihood, but which are totally refractory to any analysis utilizing concepts developed in formal economics. I apply the term, "vernacular" to these activities, since there is no other current concept that allows me to make the same distinction within the domain covered by such

terms as "informal sector", "use value", "social reproduction". Vernacular is a Latin term that we use in English only for the language that we have acquired without paid teachers. In Rome, it was used from 500 B.C. to 600 A.D. to designate any value that was homebred, homemade, derived from the commons, and that a person could protect and defend though he neither bought nor sold it on the market. I suggest that we restore this simple term, vernacular, to oppose to commodities and their shadow. It allows me to distinguish between the expansion of the shadow economy and its inverse – the expansion of the vernacular domain.

The tension and balance between vernacular work and industrial labor – paid and unpaid – is the key issue on the third dimension of options, distinct from political right and left and from technical soft and hard. Industrial labor, paid and otherwise exacted, will not disappear. But when development, wage-labor and its shadow encroach upon vernacular work, the relative priority of one or the other constitutes the issue. We are free to choose between hierarchically managed standardized work that may be paid or unpaid, self-selected or imposed on the one hand and, on the other, we can protect our freedom to choose ever newly invented forms of simple, integrated subsistence actions which have an outcome that is unpredictable to the bureaucrat, unmanageable by hierarchies and oriented to the values shared within a specific community.

If the economy expands, which the soft choice can permit, the shadow economy cannot but grow even faster, and the vernacular domain must further decline. In this case, with rising job scarcity, the unemployed will be integrated into newly organized useful activities in the informal sector. Unemployed men will be given the so-called privilege to engage in those production-fostering types of unpaid activity that, since their emergence as housework in the 19th century, have been considerately earmarked for the "weaker sex" – a designation that was also first used at that time, when industrial serfdom rather than subsistence was defined as the task of women. "Care" exacted for the sake of love will lose its sex-specific character, and in the process become manageable by the state.

Under this option, international development is here to stay. Technical aid to develop the informal sector overseas will reflect the new sexless unpaid domestication of the unemployed at home. The new experts pushing French rather than German self-help methods or windmill designs already crowd airports and conferences. The last hope of development bureaucracies lies in the development of shadow economies.

Many of the dissidents that I have mentioned take a stand against all this – against the use of soft technology to reduce the vernacular domain and to increase professional controls over informal sector activities. These new vanguards conceive technical progress as one possible instrument to support a new type of value, neither traditional nor industrial but both subsistence-oriented and rationally chosen. Their lives, with more and less success, express a critical sense of beauty, a particular experience of pleasure, a unique view of life cherished by one group, understood but not necessarily shared by the next. They have found that modern tools make it possible to subsist on activities which permit a variety of evolving life styles, and relieve much of the drudgery of old time subsistence. They struggle for the freedom to expand the vernacular domain of their lives.

Examples from Travancore to Wales may soon free those majorities who were recently captivated by the modern "demonstration model" of stupefying, sickening and paralyzing enrichment. But two conditions must be met. First, the mode of life resulting from a new relation between people and tools must be informed by the perception of man as *homo habilis* and not *homo industrialis*. Second, commodity-independent life styles must be shaped anew by each small community, and not be imposed. Communities living by predominantly vernacular values have nothing much to offer to others besides the attractiveness of their example. But the example of a poor society that enhances modern subsistence by vernacular work should be rather attractive to jobless males in a rich society now condemned, like their women to social reproduction in an expanding shadow economy. The ability, however not only to live in new ways, but to insist on this freedom demands that we clearly recognize what distinguishes the perception of *homo economicus* from all other human beings. To this end I choose the study of history as a privileged road.

2ND PART
THE WAR AGAINST SUBSISTENCE

What may not be done is tabu; even more so what may not be thought. The unthinkable is a tabu of the second order. Ibn tells of a saintly Muslim who would have died rather than eat pork; he did die of hunger, with his dog watching beside him. Pork would have defiled his faith – eating the dog would have destroyed his self-image as a man. Succulent pork is forbidden; dog or clay or begonias are simply non-food. Old Mexicans, however, appreciated all three! Watch out for your begonias if you have a Mexican peasant for tea.

Just as the environment is divided by each society differently into food, poison and what is never considered as digestible, so issues are divided by us into those which are legitimate, those one leaves to the fascists, and those which nobody raises. However, these latter are not actually illegitimate.

But if you raise them, you risk being thought a fiend, or impossibly vain. The distinction between vernacular and industrial values is of this kind. With this essay, I want to draw this distinction into the realm of permissible discussion.

Since 1973, the annual commemoration of Yom Kippur reminds us of the war which triggered the energy crisis. But a more lasting effect of that war will be its impact on economic thought. Since then economists have begun to eat pork, to violate a tabu which had been implicit in formal economics. They add to the Gross National Product goods and services for which no salary is paid and to which no price tag is attached. One after another they reveal the good news that one-third, one-half or even two-thirds of all goods and services in late industrial societies are produced outside the market by housework, private study, commuting, shopping and other unpaid activities.

Economists can only deal with realms they can measure. For forays into the non-marketed, they need new sticks. To function where money is not the currency, the concepts must be *sui generis*. But to avoid splitting their science, the new tools must be consistent with the old. Pigou defined the shadow price as one such tool. It is the money needed to substitute through a good or service something which is now done without pay. The unpaid and, perhaps, even the priceless thus become consistent with the realm of commodities, enter a domain that can be operationalized, managed and bureaucratically developed. The unpaid becomes part of a shadow economy and is related to the wares in supermarkets, classrooms, and medical clinics as the wave to the particle – electrons are not intelligible unless one examines both theories.

Close analysis reveals that this shadow economy mirrors the formal economy. The two fields are in synergy, together constituting one whole. The shadow economy developed a complete range of parallel activities, following the brightly illuminated realm where labor, prices, needs and markets were increasingly managed as industrial production increased. Thus we see that the housework of a modern woman is as radically new as the wage-labor of her husband; the replacement of home-cooked food by restaurant delivery is as new as the definition of most basic needs in terms which correspond to the outputs of modern institutions.

I argue elsewhere that the new competence of some economists, enabling them to analyze this shady area, is more than an expansion of their conventional economic analysis – it is the discovery of new land which, like the industrial market, emerged for the first time in history only during the last two centuries. I feel sorrow for such economists who do not understand what they are doing. Their destiny is as sad as that of Columbus. With the compass, the new caravel designed to follow the route the compass opened, and his own flair as a mariner, he was able to hit on unexpected land. But he died, unaware that he had chanced on a hemisphere, firmly attached to the belief that he had reached the Indies.

In an industrial world, the realm of shadow economics is comparable to the hidden side of the moon, also being explored for the first time. And the whole of this industrial reality is in turn complementary to a substantive domain which I call the vernacular reality, the domain of subsistence.

In terms of 20th century classical economics, both the shadow economy and the vernacular domain are outside the market, both are unpaid. Also, both are generally included in the so-called informal sector. And both are indistinctly viewed as contributions to "social reproduction." But what is most confusing in the analysis is the fact that the unpaid complement of wage-labor which, in its structure, is characteristic of industrial societies only, is often completely misunderstood as the survival of subsistence activities, which are characteristic of the vernacular societies and which may continue to exist in an industrial society.

Certain changes can now be discerned. The distinction between the market economy and its shadow weakens. The substitution of commodities for subsistence activities is not necessarily experienced as progress. Women ask whether the unearned consumption which accompanies homemaking is a privilege or whether they are actually forced into degrading work by the prevailing patterns of compulsory consumption. Students ask if they are in school to learn or to collaborate in their own stupefaction. Increasingly, the toil of consumption overshadows the relief consumption promised. The choice between labor-intensive consumption, perhaps less inhuman and less destructive, better organized, and modern forms of subsistence is personally known to more and more people. The choice corresponds to the difference between an expanding shadow economy and the recovery of the vernacular domain. But it is precisely this choice which is the most resistant blind spot of economics, as unpalatable as dog or clay. Perhaps the most unlikely candidate can help dispel some of the darkness. I propose to throw light on this issue through an examination of everyday speech. I shall proceed by contrasting the economic nature of this speech in industrial society with its counterpart in pre-industrial epochs. As I shall show, the distinction finds its origin in a little-known event which occurred at the end of the 15th century in Spain.

COLUMBUS FINDS THE NIGHTINGALE

Early on August 3, 1492, Christopher Columbus sailed from Palos. The neighboring and much more important Cadíz was congested that year –

Nebrija proposes a pact, not of sword and cloth - each sovereign in its own sphere - but of sword and expertise, encompassing the engine of conquest abroad and a system of scientific control of diversity within the entire kingdom.

it was the one port from which Jews were allowed to leave. Granada had been reconquered, and Jewish service was no longer needed for a struggle with Islam. Columbus headed for Cipangu, the name for Cathay (China) during the short reign of the long dead Tamerlane. He had calculated the earth's degree as equivalent to forty-five miles. This would place Eastern Asia 2,400 miles west of the Canaries, somewhere close to the Antilles in the Saragossa Sea. He had reduced the ocean to the range of the ships he could master. Columbus had on board an Arabic interpreter to enable him to speak to the great Khan. He set out to discover a route, not new land, not a new hemisphere.

His project, however, was quite unreasonable. No learned man of the early Renaissance doubted that the earth was a globe – some believing that it rested at the center of the universe, and some that it whirled in its sphere. But not since Eratosthenes had anyone underestimated its size as badly as Columbus. In 255, Eratosthenes of Cyrene measured the distance from the great library that he directed in Alexandria to Syene (now the site of the Aswan dam) as 500 miles. He measured the distance using the camel caravan's remarkably steady gait from sunrise to sunset as his "rod." He had observed that on the day of the summer solstice, the rays of the sun fell vertically at Syene, and seven degrees off the vertical at Alexandria. From this he calculated the earth's circumference to about 5 percent of its real dimension.

When Columbus sought Isabella's support for his venture, she asked Talavera, the sage, to evaluate its feasibility. An expert commission reported that the West-to-the-Orient project lacked a firm foundation. Educated authorities believed its goal to be uncertain or impossible. The proposed voyage would require three years; it was doubtful that even the newest kind of ship, the caravel – designed for distant explorations – could ever return. The oceans were neither as small nor as navigable as Columbus supposed. And it was hardly likely that God would have allowed any uninhabited lands of real value to be concealed from his people for so many centuries. Initially, then, the queen rejected Columbus; reason and bureaucratic expertise supported her. Later, swayed by zealous Franciscan friars, she retracted her earlier decision and signed her "stipulations" with Columbus. She, who had driven Islam from Europe, could not refuse her Admiral who wanted to plant the Cross beyond the Ocean Seas. And, as we shall see, the decision for colonial conquest overseas implied the challenge of a new war at home – the invasion of her own people's vernacular domain, the opening of a five-century war against vernacular subsistence, the ravages of which we now begin to fathom.

For five weeks Columbus sailed well-known waters. He put in at the Canary Islands to repair the rudder of the Pinta, to replace the lateen sail of the Niña, and to pursue a mysterious affair with Dona Beatriz de Peraza. Only on September 10, two days out of the Canaries, he picked up the Easterlies, tradewinds on which he chanced, and which carried him rapidly across the ocean. In October, he came upon land that neither he nor the queen's counselors had expected. In his diary entry for October 13, 1492, he beautifully described the song of the nightingale that welcomed him on Santo Domingo, though such birds never lived there. Columbus was and remained *gran marinero y mediocre cosmógrafo.* To the end of his life he remained convinced of having found what he had sought – a Spanish nightingale on the shores of China.

NEBRIJA ENGINEERS THE ARTIFACT: AUGUST 18, 1492

Let me now move from the reasonably well known to the unreasonably overlooked – from Columbus, immediately associated with 1492, to Elio Antonio de Nebrija, outside of Spain almost forgotten. During the time Columbus cruised southwest through recognizable Portuguese waters and harbors, in Spain the fundamental engineering of a new social reality was proposed to the queen. While Columbus sailed for foreign lands to seek the familiar – gold, subjects, nightingales – in Spain Nebrija advocates the reduction of the queen's subjects to an entirely new type of dependence. He presents her with a new weapon, grammar, to be wielded by a new kind of mercenary, the *letrado.*

I was deeply moved when I felt Nebrija's **Gramatica Castellana** in my hands – a quarto volume of five signatures set in Gothic letters. The epigraphy is printed in red, and a blank page precedes the Introduction:

A la muy alta e assi esclarecida princesa dona Isabela la tercera deste nombre Reina i senora natural de espana e las islas de nuestro mar.

Comienza la gramática que nuevamenta hizo el maestro Antonio de Nebrixa sobre la lengua castellana, e pone primero el prólogo. Léelo en buena hora.

The Conqueror of Granada receives a petition, similar to many others. But unlike the request of Columbus, who wanted resources to establish a new route to the China of Marco Polo, that of Nebrija urges the queen to invade a new domain at home. He offers Isabella a tool to colonize the language spoken by her own subjects; he wants her to replace the people's speech by the imposition of the queen's *lengua* – *her* language, *her* tongue.

EMPIRE NEEDS "LANGUAGE" AS CONSORT

I shall translate and comment on sections of the six-page introduction to Nebrija's grammar. Remember, then, that the colophon of the **Gramática Castellana** notes that it came off the press in Salamanca on the 18th of August, just fifteen days after Columbus had sailed.

> My Illustrious Queen. Whenever I ponder over the tokens of the past that have been preserved in writing, I am forced to the very same conclusion. Language has always been the consort of empire, and forever shall remain its mate. Together they come into being, together they grow and flower, and together they decline.

To understand what *la lengua*, "language," meant for Nebrija, it is necessary to know who he was. Antonio Martinez de la Cala, a *converso*, descendant of Jewish converts, had decided at age nineteen that Latin, at least on the Iberian peninsula, had become so corrupted that one could say it had died of neglect. Thus Spain was left without a language (*una lengua*) worthy of the name. The languages of Scripture – Greek, Latin, Hebrew – clearly were something other than the speech of the people. Nebrija then went to Italy where, in his opinion, Latin was least corrupted. When he returned to Spain, his contemporary Hernán Nunez wrote that it was like Orpheus bringing Euridice back from Hades. During the next twenty years, Nebrija dedicated himself to the renewal of classical grammar and rhetoric. The first full book printed in Salamanca was his Latin grammar (1482).

When he reached his forties and began to age – *as he puts it – he discovered that he could make a* language out of the speech forms he daily encoun*tered in Spain – to engineer, to synthesize chem*ically, a language. He then wrote his Spanish *grammar, the first in any modern European* tongue. The *converso* uses his classical formation *to extend the juridic category of consuetudo hispaniae* to the realm of language. Throughout the Iberian peninsula, crowds speaking various languages gather for pogroms against the Jewish outsider at the very moment when the cosmopolitan *converso* offers his services to the Crown – the creation of one language suitable for use wherever the sword could carry it.

Nebrija created two rule books, both at the service of the queen's regime. First, he wrote a grammar. Now grammars were not new. The most perfect of them, unknown to Nebrija, was already two thousand years old – Panini's grammar of Sanskrit. This was an attempt to describe a dead language, to be taught only to a very few. This is the goal pursued by Prakrit grammarians in India, and Latin or Greek grammarians in the West. Nebrija's work, however, was written as a tool for conquest abroad and a weapon to suppress untutored speech at home.

While he worked on his grammar, Nebrija also wrote a dictionary that, to this day, remains the single best source on Old Spanish. The two attempts made in our lifetime to supersede him both failed. Gili Gaya's **Tesauro Lexicográfico**, begun in 1947, foundered on the letter E, and R.S. Boggs (**Tentative Dictionary of Medieval Spanish**) remains, since 1946, an often copied draft. Nebrija's dictionary appeared the year after his grammar, and already contained evidence of the New World – the first Americanism, *canoa* (canoe), appeared.

CASTILIAN PASSES THROUGH ITS INFANCY

Now note what Nebrija thinks about Castilian.

> Castilian went through its infancy at the time of the judges . . . it waxed in strength under Alfonso the Learned. It was he who collected law and history books in Greek and Latin and had them translated.

Indeed, Alfonso (1221 - 1284) was the first European monarch to use the vulgar or vernacular tongue of the scribes as his chancery language. His intent was to demonstrate that he was not one of the Latin kings. Like a caliph, he ordered his courtiers to undertake pilgrimages through Muslim and Christian books, and transform them into treasures that, because of their very language, would be a valuable inheritance to leave his kingdom. Incidentally, most of his translators were Jews from Toledo. And these Jews – whose own language was Old Castilian – preferred to translate the oriental languages into the vernacular rather than into Latin, the sacred language of the Church.

Nebrija points out to the queen that Alfonso had *left solid tokens of Old Spanish; in addition, he* had worked toward the transformation of vernacu*lar speech into language proper through using it*

to make laws, to record history, and to translate from the classics.

He continues:

> This our language followed our soldiers whom we sent abroad to rule. It spread to Aragon, to Navarra, even to Italy . . . the scattered bits and pieces of Spain were thus gathered and joined into one single kingdom.

Nebrija here reminds the queen of the new pact possible between sword and book. He proposes a covenant between two spheres, both within the secular realm of the Crown, a covenant distinct from the medieval pact between Emperor and Pope, which had been a covenant bridging the secular and the sacred. He proposes a pact, not of sword and cloth – each sovereign in its own sphere – but of sword and expertise, encompassing the engine of conquest abroad and a system of scientific control of diversity within the entire kingdom. And he knows well whom he addresses: the wife of Ferdinand of Aragon, a woman he once praised as the most enlightened of all men (sic). He is aware that she reads Cicero, Seneca, and Livy in the original for her own pleasure; and that she possesses a sensibility that unites the physical and spiritual into what she herself called "good taste." Indeed, historians claim that she is the first to use this expression. Together with Ferdinand, she was trying to give shape to the chaotic Castile they had inherited; together they were creating Renaissance institutions of government, institutions apt for the making of a modern state, and yet, something better than a nation of lawyers. Nebrija calls to their minds a concept that, to this day, is powerful in Spanish – *armas y letras.* He speaks about the marriage of empire and language, addressing the sovereign who had just recently – and for a painfully short time – seized from the Church the Inquisition, in order to use it as a secular instrument of royal power. The monarchy used it to gain economic control of the grandees, and to replace noblemen by the *letrados* of Nebrija on the governing councils of the kingdom. This was the monarchy that transformed the older advisory bodies into bureaucratic organizations of civil servants, institutions fit only for the execution of royal policies. These secretaries or ministries of "experts," under the court ceremonial of the Hapsburgs, were later assigned a ritual role in processions and receptions incomparable to any other secular bureaucracy since the times of Byzantium.

LANGUAGE NOW NEEDS TUTORS

Very astutely, Nebrija's argument reminds the queen that a new union of *armas y letras*, complementary to that of church and state, was essential to gather and join the scattered pieces of Spain into a single absolute kingdom.

> This unified and sovereign body will be of such shape and inner cohesion that centuries will be unable to undo it. Now that the Church has been purified, and we are thus reconciled to God [does he think of the work of his contemporary, Torquemada?], now that the enemies of the Faith have been subdued by our arms [he refers to the apogee of the **Reconquista**], now that just laws are being enforced, enabling all of us to live as equals [perhaps having in mind the **Hermandades**], what else remains but the flowering of the peaceful arts. And among the arts, foremost are those of language, which sets us apart from wild animals; language, which is the unique distinction of man, the means for the kind of understanding which can be surpassed only by contemplation.

Here, we distinctly hear the appeal of the humanist to the prince, requesting him to defend the realm of civilized Christians against the domain of the wild. "The wild man's inability to speak is part of the Wild Man Myth whenever we meet him during the middle ages . . . in a morally ordered world, to be wild is to be incoherent mute . . . sinful and accursed." Formerly, the heathen was to be brought into the fold through baptism; henceforth, through language. Language now needs tutors.

A LOOSE AND UNRULY LANGUAGE

Nebrija then points out:

> So far, this our language has been left loose and unruly and, therefore, in just a few centuries this language has changed beyond recognition. If we were to compare what we speak today with the language spoken five hundred years ago, we would notice a difference and a diversity that could not be any greater if these were two alien tongues.

Nebrija describes the evolution and extension of vernacular tongues, of the *lengua vulgar*, through time. He refers to the untutored speech of Castile – different from that of Aragon and Navarra, regions where soldiers had recently introduced Castilian – but a speech also different from the older Castilian into which Alfonso's monks and Jews had translated the Greek classics from their Arabic versions. In the fifteenth century people felt and lived their languages otherwise than we do today. The study of Columbus' language made by Menendez Pidal helps us to understand this. Columbus, originally a cloth merchant from Genoa, had as his first language Genovese, a dialect still not standardized today. He learned to write business letters in Latin, albeit a barbarous variety. After being shipwrecked in Portugal, he married a Portuguese and probably forgot most

of his Italian. He spoke, but never wrote a word of Portuguese. During his nine years in Lisbon, he took up writing in Spanish. But he never used his brilliant mind to learn Spanish well, and always wrote it in a hybrid, Portuguese-mannered style. His Spanish is not Castilian but is rich in simple words picked up all over the peninsula. In spite of some syntactical monstrosities, he handles this language in a lively, expressive, and precise fashion. Columbus, then, wrote in two languages he did not speak, and spoke several. None of this seems to have been problematic for his contemporaries. However, it is also true that none of these were languages in the eyes of Nebrija.

UNBOUND AND UNGOVERNED SPEECH FINDS A NEW ALLY IN PRINTING...

Continuing to develop his petition, he introduces the crucial element of his argument: *La lengua suelta y fuera de regla*, the unbound and ungoverned speech in which people actually live and manage their lives, has become a challenge to the Crown. He now interprets an unproblematic historical fact as a problem for the architects of a new kind of polity – the modern state.

> Your Majesty, it has been my constant desire to see our nation become great, and to provide the men of my tongue with books worthy of their leisure. Presently, they waste their time on novels and fancy stories full of lies.

Nebrija proposes to regularize language to stop people from wasting time on frivolous reading, *"quando la emprenta aun no informaba la lengua de los libros."* And Nebrija is not the only late fifteenth-century person concerned with the "waste" of leisure time made possible through the inventions of paper and movable type. Ignatius of Loyola, twenty-nine years later, while convalescing in Pamplona with a leg shattered by a cannonball, came to believe that he had disastrously wasted his youth. At thirty, he looked back on his life as one filled with "the vanities of the world . . .", whose leisure had included the reading of vernacular trash.

...AND MUST BE REPRESSED

Nebrija argues for standardizing a living language for the benefit of its printed form. This argument is also made in our generation, but the end now is different. Our contemporaries believe that standardized language is a necessary condition to teach people to read, indispensable for the distribution of printed books. The argument in 1492 is the opposite: Nebrija is upset because people who speak in dozens of distinct vernacular tongues have become the victims of a reading epidemic. They waste their leisure, throwing away their time on books that circulate outside of any possible bureaucratic control. A manuscript was so precious and rare that authorities could often suppress the work of an author by literally seizing all the copies. Manuscripts could sometimes be extirpated by the roots. Not so books. Even with the small editions of two hundred to less than a thousand copies – typical for the first generation of print – it would never be possible to confiscate an entire run. Printed books called for the exercise of censorship through an **Index of Forbidden Books**. Books could only be proscribed, not destroyed. But Nebrija's proposal appeared more than fifty years before the **Index** was published in 1559. And he wishes to achieve control over the printed word on a much deeper level than what the Church later attempted through proscription. He wants to replace the people's vernacular by the grammarian's language. The humanist proposes the standardization of colloquial language to remove the new technology of printing from the vernacular domain – to prevent people from printing and reading in the various languages that, up to that time, they had only spoken. By this monopoly over an official and taught language, he proposes to suppress wild, untaught vernacular reading.

VERNACULAR ALLIED TO PRINTING WOULD CHALLENGE THE NATION STATE

To grasp the full significance of Nebrija's argument – the argument that compulsory education in a standardized national tongue is necessary to stop people from wanton reading that gives them an easy pleasure – one must remember the status of print at that time. Nebrija was born before the appearance of movable type. He was thirteen when the first movable stock came into use. His conscious adult life coincides with the Incunabula. When printing was in its twenty-fifth year, he published his Latin grammar; when it was in its thirty-fifth year, his Spanish grammar. Nebrija could recall the time before print, as I can the time before television. Nebrija's text, on which I am commenting, was by coincidence published the year Thomas Caxton died. And Caxton's work itself furthers our understanding of the vernacular book.

Thomas Caxton was an English cloth merchant living in the Netherlands. He took up translat-

ing, and then apprenticed himself to a printer. After publishing a few books in English, he took his press to England in 1476. By the time he died (1491), he had published forty translations into English, and nearly everything available in English vernacular literature, with the notable exception of William Langland's **Piers Plowman**. I have often wondered if he left this important work off his list because of the challenge it might present to one of his best sellers – **The Art and Crafte to Knowe Well to Dye**. This volume of his Westminster Press belongs to the first series of self-help books. Whatever would train for a society well informed and well mannered, whatever would lead to behavior gentle and devout, was gathered in small folios and quartos of neat Gothic print – instructions on everything from manipulating a knife to conducting a conversation, from the art of weeping to the art of playing chess to that of dying. Before 1500, no less than 100 editions of this last book appeared. It is a self-instruction manual, showing one how to prepare to die with dignity and without the intervention of physician or clergy.

Four categories of books first appeared in the peoples' languages: vernacular, native literature; translations from French and Latin; devotional books; and already there were the how-to-do-it manuals that made teachers unnecessary. Printed books in Latin were of a different sort, comprising textbooks, rituals, and lawbooks – books at the service of professional clergymen and teachers. From the very beginning, printed books were of two kinds: those which readers independently chose for their pleasure, and those professionally prescribed for the reader's own good. It is estimated that before 1500, more than seventeen hundred presses in almost three hundred European towns had produced one or more books. Almost forty thousand editions were published during the fifteenth century, comprising somewhere between fifteen and twenty million copies. About one-third of these were published in the various vernacular languages of Europe. This portion of printed books is the source of Nebrija's concern.

BOOKS HENCEFORTH SHALL BE SEEN AND NOT HEARD

To appreciate more fully his worry about the freedom to read, one must remember that reading in his time was not silent. Silent reading is a recent invention. Augustine was already a great author and the Bishop of Hippo when he found that it could be done. In his **Confessions**, he describes the discovery. During the night, charity forbade him to disturb his fellow monks with noises he made while reading. But curiosity impelled him to pick up a book. So, he learned to read in silence, an art that he had observed in only one man, his teacher, Ambrose of Milan. Ambrose practiced the art of silent reading because otherwise people would have gathered around him and would have interrupted him with their queries on the text. Loud reading was the link between classical learning and popular culture.

Habitual reading in a loud voice produces social effects. It is an extraordinarily effective way of teaching the art to those who look over the reader's shoulder; rather than being confined to a sublime or sublimated form of self-satisfaction, it promotes community intercourse; it actively leads to common digestion of and comment on the passages read. In most of the languages of India, the verb that translates into "reading" has a meaning close to "sounding." The same verb makes the book and the vina sound. To read and to play a musical instrument are perceived as parallel activities. The current, simpleminded, internationally accepted definition of literacy obscures an alternate approach to book, print, and reading. If reading were conceived primarily as a social activity as, for example, competence in playing the guitar, fewer readers could mean a much broader access to books and literature.

Reading aloud was common in Europe before Nebrija's time. Print multiplied and spread opportunities for this infectious reading in an epidemic manner. Further, the line between literate and illiterate was different from what we recognize now. Literate was he who had been taught Latin. The great mass of people, thoroughly conversant with the vernacular literature of their region, either did not know how to read and write, had picked it up on their own, had been instructed as accountants, had left the clergy or, even if they knew it, hardly used their Latin. This held true for the poor and for many nobles, especially women. And we sometimes forget that even today the rich, many professionals, and high-level bureaucrats have assistants report a verbal digest of documents and information, while they call on secretaries to write what they dictate.

To the queen, Nebrija's proposed enterprise must have seemed even more improbable than Columbus' project. But, ultimately, it turned out to be more fundamental than the New World for the rise of the Hapsburg Empire. Nebrija clearly showed the way to prevent the free and anarchic development of printing technology, and exactly how to transform it into the evolving national state's instrument of bureaucratic control.

AT THE QUEEN'S SERVICE, SYNTHETIC CASTILIAN SHALL REPLACE THE PEOPLE'S SPEECH

Today, we generally act on the assumption that books could not be printed and would not be read in any number if they were written in a vernacular

Nebrija's grammar is conceived by him as a pillar of the nation-state.

language free from the constraints of an official grammar. Equally, we assume that people could not learn to read and write their own tongue unless they are taught in the same manner as students were traditionally taught Latin. Let us listen again to Nebrija.

> By means of my grammar, they shall learn artificial Castilian, not difficult to do, since it is built up on the base of a language they know; and, then, Latin will come easily...

Nebrija already considers the vernacular as a raw material from which his Castilian art can be produced, a resource to be mined, not unlike the Brazilwood and human chattel that, Columbus sadly concluded, were the only resources of value or importance in Cuba.

SPEECH NURTURED FROM ROOTS IS REPLACED BY LANGUAGE DISPENSED FROM THE CROWN

Nebrija does not seek to teach grammar that people learn to read. Rather, he implores Isabella to give him the power and authority to stem the anarchic spread of reading by the use of his grammar.

> Presently, they waste their leisure on novels and fancy stories full of lies. I have decided, therefore, that my most urgent task is to transform Castilian speech into an artifact so that whatever henceforth shall be written in this language may be of one standard tenor.

Nebrija frankly states what he wants to do and even provides the outline of his incredible project. He deliberately turns the mate of empire into its slave. Here the first modern language expert advises the Crown on the way to make, out of a people's speech and lives, tools that befit the state and its pursuits. Nebrija's grammar is conceived by him as a pillar of the nation-state. Through it, the state is seen, from its very beginning, as an aggressively productive agency. The new state takes from people the words on which they subsist, and transforms them into the standardized language which henceforth they are compelled to use, each one at the level of education that has been institutionally imputed to him. Henceforth, people will have to rely on the language they receive from above, rather than to develop a tongue in common with one another. The switch from the vernacular to an officially taught mother tongue is perhaps the most significant – and, therefore, least researched – event in the coming of a commodity-intensive society. The radical change from the vernacular to taught language foreshadows the switch from breast to bottle, from subsistence to welfare, from production for use to production for market, from expectations divided between state and church to a world where the Church is marginal, religion is privatized, and the state assumes the maternal functions heretofore claimed only by the Church. Formerly, there had been no salvation outside the Church; now, there would be no reading, no writing – if possible, no speaking – outside the educational sphere. People would have to be reborn out of the monarch's womb, and be nourished at her breast. Both the citizen of the modern state and his state-provided language come into being for the first time – both are without precedent anywhere in history.

THE BOSOM OF ALMA MATER

But dependence on a formal, bureaucratic institution to obtain for every individual a service that is as necessary as breast milk for human subsistence, while radically new and without parallel outside of Europe, was not a break with Europe's past. Rather, this was a logical step forward – a process first legitimated in the Christian Church evolved into an accepted and expected temporal function of the secular state. Institutional maternity has a unique European history since the third century. In this sense, it is indeed true that Europe is the Church and the Church is Europe. Nebrija and universal education in the modern state cannot be understood without a close knowledge of the Church, insofar as this institution is represented as a mother.

From the very earliest days, the Church is called "mother". Marcion the Gnostic uses this designation in 144. At first, the community of the faithful is meant to be mother to the new members whom communion, that is, the fact of celebrating community, engenders. Soon, however, the Church becomes a mother outside of whose bosom it is hardly worthwhile to be called human or to be alive. But the origins of the Church's self-understanding as mother have been little researched. One can often find comments about the role of mother goddesses in the various religions scattered throughout the Roman Empire at the time Christianity began to spread. But the fact that no previous community had ever been called mother has yet to be noticed and studied. We know that the image of the Church as mother comes from Syria, and that it flourished in the third century in North Africa. On a beautiful mosaic

Henceforth, people will have to rely on the language they receive from above, rather than to develop a tongue in common with one another.

near Tripoli, where the claim is first expressed, both the invisible community and the visible building are represented as mother. And Rome is the last place where the metaphor is applied to the Church. The female personification of an institution did not fit the Roman style; the idea is first taken up only late in the fourth century in a poem by Pope Damasus.

This early Christian notion of the Church as mother has no historical precedent. No direct gnostic or pagan influence, nor any direct relationship to the Roman mother cult has thus far been proven. The description of the Church's maternity is, however, quite explicit. The Church conceives, bears, and gives birth to her sons and daughters. She may have a miscarriage. She raises her children to her breast to nourish them with the milk of faith. In this early period, the institutional trait is clearly present, but the maternal authority exercised by the Church through her bishops and the ritual treatment of the Church building as a female entity are still balanced by the insistence on the motherly quality of God's love, and of the mutual love of His children in baptism. Later, the image of the Church as a prototype of the authoritarian and possessive mother becomes dominant in the middle ages. The popes then insist on an understanding of the Church as *Mater*, *Magistra*, and *Domina* – mother, authoritative teacher, sovereign. Thus Gregory VII (1073-1085) names her in the struggle with the emperor Henry IV.

Nebrija's introduction is addressed to a queen intent on building a modern state. And his argument implies that, institutionally, the state must now assume the universally maternal functions heretofore claimed only by the Church. *Educatio*, as a function first institutionalized at the bosom of Mother Church, becomes a function of the Crown in the process of the modern state's formation.

Educatio prolis is a term that in Latin grammar calls for a female subject. It designates the feeding and nurturing in which mothers engage, be they bitch, sow, or woman. Among humans only women educate. And they educate only infants, which etymologically means those who are yet without speech. To educate has etymologically nothing to do with "drawing out" as pedagogical folklore would have it. Pestalozzi should have heeded Cicero: educit obstetrix – educat nutrix: the midwife draws – the nurse nurtures, because men do neither in Latin. They engage in *docentia* (teaching) and *instructio* (instruction). The first men who attributed to themselves educational functions were early bishops who led their flocks to the *alma ubera* (milk-brimming breasts) of Mother Church from which they were never to be weaned. This is why they, like their secular successors, call the faithful *alumni* – which means sucklings or suckers, and nothing else. It is this transfer of woman's functions to specialized institutional spheres governed by clergies that Nebrija helped to bring about. In the process the state acquired the function of a many-uddered provider of distinct forms of sustenance, each corresponding to a separate basic need, and each guarded and managed by the clergy, always male in the higher reaches of the hierarchy.

BUREAUCRATIC CONTROL AS THE STONE OF WISDOM

Actually, when Nebrija proposes to transform Castilian into an artifact, as necessary for the queen's subjects as faith for the Christian, he appeals to the hermetic tradition. In the language of his time, the two words he uses – *reducir* and *artificio* – have both an ordinary and a technical meaning. In the latter case, they belong to a language of alchemy.

According to Nebrija's own dictionary, *reducir* in fifteenth-century Spanish means "to change", "to bring into obeisance," and "to civilize." In this last sense, the Jesuits later understood the **Reducciones de Paraguay**. In addition, *reductio* – throughout the fifteenth and sixteenth centuries – means one of the seven stages by which ordinary elements of nature are transmuted into the philosopher's stone, into the panacea that, by touch, turns everything into gold. Here, *reductio* designates the fourth of seven grades of sublimation. It designates the crucial test that must be passed by grey matter to be promoted from the primary to the secondary grades of enlightenment. In the first four grades, raw nature is successively liquefied, purified, and evaporated. In the fourth grade, that of *reductio*, it is nourished on philosopher's milk. If it takes to this substance, which will occur only if the first three processes have completely voided its unruly and raw nature, the chrysosperm, the sperm of gold hidden in its depth, can be brought forth. This is *educatio*. During the following three stages, the alchemist can coagulate his *alumnus* – the substance he has fed with his milk – into the philosopher's stone.

The precise language used here is a bit posterior to Nebrija. It is taken almost literally from Paracelsus, another man born within a year of the publication of the **Gramatica Castellana.**

THE EXPERT NEEDED BY THE CROWN

Now let us return to the text. Nebrija develops his argument:

> I have decided to transform Castilian into an artifact so that whatever shall be written henceforth in this language shall be of one standard tenor, one coinage that can outlast the times. Greek and Latin have been governed by art, and thus have kept their uniformity throughout the ages. Unless the like of this be done for our language, in vain Your Majesty's chroniclers . . . shall praise your deeds. Your labor will not last more than a few years, and we shall continue to feed on Castilian translations of foreign tales about our own kings. Either your feats will fade with the language or they will roam among aliens abroad, homeless, without a dwelling in which they can settle.

The Roman Empire could be governed through the Latin of its elite. But the traditional, separate elite language used in former empires for keeping records, maintaining international relations, and advancing learning – like Persian, Arabic, Latin, or Frankish – is insufficient to realize the aspirations of nationalistic monarchies. The modern European state cannot function in the world of the vernacular. The new national state needs an *artificio*, unlike the perennial Latin of diplomacy and the perishable Castilian of Alfonso the Learned. This kind of polity requires a standard language understood by all those subject to its laws and for whom the tales written at the monarch's behest (that is, propaganda) are destined.

SOCIAL STATUS FROM TAUGHT LANGUAGE RATHER THAN BLOOD

However, Nebrija does not suggest that Latin be abandoned. On the contrary, the neo-Latin renaissance in Spain owed its existence largely to his grammar, dictionary, and textbooks. But his important innovation was to lay the foundation for a linguistic ideal without precedent: the creation of a society in which the universal ruler's bureaucrats, soldiers, merchants, and peasants all pretend to speak one language, a language the poor are presumed to understand and to obey. Nebrija established the notion of a kind of ordinary language that itself is sufficient to place each man in his assigned place on the pyramid that education in a mother tongue necessarily constructs. In his argument, he insists that Isabella's claim to historical fame depends on forging a language of propaganda – universal and fixed like Latin, yet capable of penetrating every village and farm, to reduce subjects into modern citizens.

How times had changed since Dante! For Dante, a language that had to be learned, to be spoken according to a grammar, was inevitably a dead tongue. For him, such a language was fit only for schoolmen, whom he cynically called *inventores grammaticae facultatis.* What for Dante was dead and useless, Nebrija recommends as a tool. One was interested in vital exchange, the other in universal conquest, in a language that by rule would coin words as incorruptible as the stones of a palace:

> Your Majesty, I want to lay the foundations for the dwelling in which your fame can settle. I want to do for our language what Zeno has done for Greek, and Crates for Latin. I do not doubt that their betters have come to succeed them. But the fact that their pupils have improved on them does not detract from their or, I should say, from our glory – to be the inventors of a necessary craft just when the time for such invention was ripe. Trust me, Your Majesty, no craft has ever arrived more timely than grammar for the Castilian tongue at this time.

The expert is always in a hurry, but his belief in progress gives him the language of humility. The academic adventurer pushes his government to adopt his idea now, under threat of failure to achieve its imperial designs. This is the time!

> Our language has indeed just now reached a height from which we must fear more that we sink, than we can ever hope to rise.

THE EXPERT AS TUTOR OF THE SUBJECT'S INTEREST

Nebrija's last paragraph in the introduction exudes eloquence. Evidently the teacher of rhetoric knew what he taught. Nebrija has explained his project; given the queen logical reasons to accept it; frightened her with what would happen if she were not to heed him; now, finally, like Columbus, he appeals to her sense of a manifest destiny.

> Now, Your Majesty, let me come to the last advantage that you shall gain from my grammar. For the purpose, recall the time when I presented you with a draft of this book earlier this year in Salamanca. At this time, you asked me what end such a grammar could possibly serve. Upon this, the Bishop of Avila interrupted to answer in my stead. What he said was this: "Soon Your Majesty will have placed her yoke upon many barbarians who speak outlandish tongues. By this, your victory, these people shall stand in a new need; the need for the laws the victor owes to the vanquished, and the need

for the language we shall bring with us." My grammar shall serve to impart to them the Castilian tongue, as we have used grammar to teach Latin to our young.

NEBRIJA'S PROJECT SCANDALIZES HER MAJESTY

We can attempt a reconstruction of what happened at Salamanca when Nebrija handed the queen a draft of his forthcoming book. The queen praised the humanist for having provided the Castilian tongue with what had been reserved to the languages of Scripture – Hebrew, Greek, and Latin. (It is surprising and significant that the *converso*, in the year of Granada, does not mention the Arabic of the Koran!) But while Isabella was able to grasp the achievement of her *letrado* – the description of a living tongue as rules of grammar – she was unable to see any practical purpose in such an undertaking. For her, grammar was an instrument designed solely for use by teachers. She believed, however, that the vernacular simply could not be taught. In her royal view of linguistics, every subject of her many kingdoms was so made by nature that during his lifetime he would reach perfect dominion over his tongue on his own. In this version of "majestic linguistics," the vernacular is the subject's domain. By the very nature of things, the vernacular is beyond the reach of the Spanish Monarch's authority. But the ruler forging the nation state is unable to see the logic inherent in the project. Isabella's initial rejection underscores the originality of Nebrija's proposal.

This discussion of Nebrija's draft about the need for instruction to speak one's mother tongue must have taken place in the months around March, 1492, the same time Columbus argued his project with the queen. At first, Isabella refused Columbus on the advice of technical counsel – he had miscalculated the circumference of the globe. But Nebrija's proposal she rejected out of a different motive: from royal respect for the autonomy of her subject's tongues. This respect of the Crown for the juridic autonomy of each village, of the *fuero del pueblo*, the judgment by peers, was perceived by people and sovereign as the fundamental freedom of Christians engaged in the reconquest of Spain. Nebrija argues against this traditional and typically Iberic prejudice of Isabella – the notion that the Crown cannot encroach on the variety of customs in the kingdoms – and calls up the image of a new, universal mission for a modern Crown.

Ultimately, Columbus won out because his Franciscan friends presented him to the queen as a man driven by God to serve her mystical mission. Nebrija proceeds in the same fashion. First, he argues that the vernacular must be replaced by an *artificio* to give the monarch's power increased range and duration; then, to cultivate the arts by decision of the court; also, to guard the established order against the threat presented by wanton reading and printing. But he concludes his petition with an appeal to "the Grace of Granada" – the queen's destiny, not just to conquer, but to civilize the whole world.

Both Columbus and Nebrija offer their services to a new kind of empire builder. But Columbus proposes only to use the recently created caravels to the limit of their range for the expansion of royal power in what would become New Spain. Nebrija is more basic – he argues the use of his grammar for the expansion of the queen's power in a totally new sphere: state control over the shape of people's everyday subsistence. In effect, Nebrija drafts the declaration of war against subsistence which the new state was organizing to fight. He intends the teaching of a mother tongue – the first invented part of universal education.

3RD PART
THE IMPOSITION OF TAUGHT MOTHER TONGUE

Historians have chosen Columbus' voyage from Palos as a date convenient for marking the transition from the Middle Ages to modern times, a point useful for changing editors of textbooks. But the world of Ptolemy did not become the world of Mercator in one year, nor did the world of the vernacular become the age of education overnight. Rather, traditional cosmography was gradually adjusted in the light of widening experience. Columbus was followed by Cortēz, Copernicus by Kepler, Nebrija by Comenius. Unlike personal insight, the change in world view that generated our dependence on goods and services took 500 years.

THE RISE OF COMMODITY-INTENSIVE SOCIETY

How often the hand of the clock advances depends on the language of the ciphers on the quadrant. The Chinese speak of five stages in sprouting, and dawn approaches in seven steps for the Arabs. If I were to describe the evolution of *homo economicus* from Mandeville to Marx or Galbraith, I would come to a different view of epochs than if I had a mind to outline the stages in which the ideology of *homo educandus* developed from Nebrija through Radke to Comenius. And again, within this same paradigm, a different set of turning points would best describe the decay of untutored learning and the route toward the inescapable miseducation that educational institutions necessarily dispense.

The idea that there is no salvation without personal services provided by professionals in the name of an institutional Mother Church is one of these formerly unnoticed developments without which our own age would be unthinkable.

It took a good decade to recognize that Columbus had found a new hemisphere, not just a new route. It took much longer to invent the concept "New World" for the continent whose existence he had denied.

A full century and a half separated the claim of Nebrija – in the queen's service he had to teach all her subjects to speak – and the claim of John Amos Comenius – the possession of a method by which an army of schoolteachers would teach everybody everything perfectly.

By the time of Comenius (1592 - 1670), the ruling groups of both the Old and New Worlds were deeply convinced of the need for such a method. An incident in the history of Harvard College aptly illustrates the point. On the one hundred and fiftieth birthday of Nebrija's grammar, John Winthrop, Jr., was on his way to Europe searching for a theologian and educator to accept the presidency of Harvard. One of the first persons he approached was the Czech Comenius, leader and last bishop of the Moravian Church. Winthrop found him in London, where he was organizing the Royal Society and advising the government on public schools. In **Magna Didactica, vel Ars Omnibus Omnia Omnino Docendi**, Comenius had succinctly defined the goals of his profession. Education begins in the womb, and does not end until death. Whatever is worth knowing is worth teaching by a special method appropriate to the subject. The preferred world is the one so organized that it functions as a school for all. Only if learning is the result of teaching can individuals be raised to the fullness of their humanity. People who learn without being taught are more like animals than men. And the school system must be so organized that all, old and young, rich and poor, noble and low, men and women, be taught effectively, not just symbolically and ostentatiously.

These are the thoughts written by the potential president of Harvard. But he never crossed the Atlantic. By the time Winthrop met him, he had already accepted the invitation of the Swedish government to organize a national system of schools for Queen Christina. Unlike Nebrija, he never had to argue the need for his services – they were always in great demand. The domain of the vernacular, considered untouchable by Isabella, had become the hunting ground for job-seeking Spanish *letrados*, Jesuits, and Massachusetts divines. A sphere of formal education had been disembedded. Formally taught mother tongue professionally handled according to abstract rules had begun to compare with and encroach upon the vernacular. This gradual replacement and degradation of the vernacular by its costly counterfeit heralds the coming of the market-intensive society in which we now live.

THE DECLINE OF VERNACULAR VALUES

Vernacular comes from an Indo-Germanic root that implies "rootedness" and "abode." *Vernaculum* as a Latin word was used for whatever was homebred, homespun, homegrown, homemade, as opposed to what was obtained in formal exchange. The child of one's slave and of one's wife, the donkey born of one's own beast, were vernacular beings, as was the staple that came from the garden or the commons. If Karl Polanyi had adverted to this fact, he might have used the term in the meaning accepted by the ancient Romans: sustenance derived from reciprocity patterns imbedded in every aspect of life, as distinguished from sustenance that comes from exchange or from vertical distribution.

Vernacular was used in this general sense from preclassical times down to the technical formulations found in the Codex of Theodosius. It was Varro who picked the term to introduce the same distinction in language. For him, vernacular speech is made up of the words and patterns grown on the speaker's own ground, as opposed to what is grown elsewhere and then transported. And since Varro's authority was widely recognized, his definition stuck. He was the librarian of both Caesar and Augustus and the first Roman to attempt a thorough and critical study of the Latin language. His **Lingua Latina** was a basic reference book for centuries. Quintillian admired him as the most learned of all Romans. And Quintillian, the Spanish-born drill master for the future senators of Rome, is always proposed to normal students as one of the founders of their profession. But neither can be compared to Nebrija. Both Varro and Quintillian were concerned with shaping the speech of senators and scribes, the

speech of the forum; Nebrija with the language of the common man who could read and listen to readings. Simply, Nebrija proposed to substitute a mother tongue for the vernacular.

Vernacular came into English in the one restricted sense to which Varro had confined its meaning. Just now, I would like to resuscitate some of its old breath. We need a simple, straightforward word to designate the activities of people when they are not motivated by thoughts of exchange, a word that denotes autonomous, non-market related actions through which people satisfy everyday needs – the actions that by their very nature escape bureaucratic control, satisfying needs to which, in the very process, they give specific shape. Vernacular seems a good old word for this purpose, and should be acceptable to many contemporaries. There are technical words that designate the satisfaction of needs that economists do not or cannot measure – social production as opposed to economic production, the generation of use-values as opposed to the production of commodities, household economics as opposed to market economics. But these terms are specialized, tainted with some ideological prejudice, and each, in a different way, badly limps. Each contrasting pair of terms, in its own way, also fosters the the confusion that assigns vernacular undertakings to unpaid, standardized, formalized activities. It is this kind of confusion I wish to clarify. We need a simple adjective to name those acts of competence, lust, or concern that we want to defend from measurement or manipulation by Chicago Boys and Socialist Commissars. The term must be broad enough to fit the preparation of food and the shaping of language, childbirth, and recreation, without implying either a privatized activity akin to the housework of modern women, a hobby or an irrational and primitive procedure. Such an adjective is not at hand. But vernacular might serve. By speaking about vernacular language and the possibility of its recuperation, I am trying to bring into awareness and discussion the existence of a vernacular mode of being, doing, and making that in a desirable future society might again expand in all aspects of life.

Mother tongue, since the term was first used, has never meant the vernacular, but rather its contrary. The term was first used by Catholic monks to designate a particular language they used, instead of Latin, when speaking from the pulpit. No Indo-Germanic culture before had used the term. The word was introduced into Sanskrit in the eighteenth century as a translation from the English. The term has no roots in the other major language families now spoken on which I could check. The only classical people who viewed their homeland as a kind of mother were the Cretans. Bachofen suggests that memories of an old matriarchal order still lingered in their culture. But even in Crete, there was no equivalent to "mother" tongue. To trace the association which led to the term mother tongue, I shall first have to look at what happened at the court of Charlemagne, and then what happened later in the Abbey of Gorz.

THE FIRST UNIVERSAL NEED FOR PROFESSIONAL SERVICE

The idea that humans are born in such fashion that they need institutional service from professional agents in order to reach that humanity for which by birth all people are destined can be traced down to Carolingian times. It was then that, for the first time in history, it was discovered that there are certain basic needs, needs that are universal to mankind and that cry out for satisfaction in a standard fashion that cannot be met in a vernacular way. The discovery is perhaps best associated with the Church reform that took place in the eighth century. The Scottish monk Alcuin, the former chancellor of York University who became the court philosopher of Charles the Great, played a prominent role in this reform. Up to that time the Church had considered its ministers primarily as priests, that is, as men selected and invested with special powers to meet communitary, liturgical, public needs. They were engaged in preaching at ritual occasions and had to preside at functions. They acted as public officials, analogous to those others through whom the state provided for the administration of justice, or, in Roman times, for public work. To think of these kinds of magistrates as if they were "service professionals" would be an anachronistic projection of our contemporary categories.

But then, from the eighth century on, the classical priest rooted in Roman and Hellenistic models began to be transmogrified into the precursor of the service professional: the teacher, social worker, or educator. Church ministers began to cater to the personal needs of parishioners, and to equip themselves with a sacramental and pastoral theology that defined and established these needs for their regular service. The institutionally defined care of the individual, the family, the village community, acquires unprecedented prominence. The term "holy mother the church" ceases almost totally to mean the actual assembly of the faithful whose love, under the impulse of the Holy Spirit, engenders new life in the very act of meeting. The term mother henceforth refers to an invisible, mystical reality from which alone those services absolutely necessary for salvation can be obtained. Henceforth, access to the good graces of this mother on whom universally necessary salvation depends is entirely controlled by a hierarchy of ordained males. This gender-specific

mythology of male hierarchies mediating access to the institutional source of life is without precedent. From the ninth to the eleventh century, the idea took shape that there are some needs common to all human beings that can be satisfied only through service from professional agents. Thus the definition of needs in terms of professionally defined commodities in the service sector precedes by a millennium the industrial production of universally needed basic goods.

Thirty-five years ago, Lewis Mumford tried to make this point. When I first read his statement that the monastic reform of the ninth century created some of the basic assumptions on which the industrial system is founded, I could not be convinced by something I considered more of an intuition than a proof. In the meantime, though, I have found a host of converging arguments – most of which Mumford does not seem to suspect – for rooting the ideologies of the industrial age in the earlier Carolingian Renaissance. The idea that there is no salvation without personal services provided by professionals in the name of an institutional Mother Church is one of these formerly unnoticed developments without which, again, our own age would be unthinkable. True, it took five hundred years of medieval theology to elaborate on this concept. Only by the end of the Middle Ages would the pastoral self-image of the Church be fully rounded. And only in the Council of Trent (1545) would this self-image of the Church as a mother milked by clerical hierarchies become formally defined. Then, in the Constitution of the Second Vatican Council (1964), the Catholic Church, which had served in the past as the prime model for the evolution of secular service organizations, aligns itself explicitly in the image of its secular imitations.

PROFESSIONAL CONTROL OVER THE NATURE OF NEEDED SERVICE

The important point here is the notion that the clergy can define its services as needs of human nature, and make this service-commodity the kind of necessity that cannot be forgone without jeopardy to eternal life. It is in this ability of a nonhereditary elite that we ought to locate the foundation without which the contemporary service or welfare state would not be conceivable. Surprisingly little research has been done on the religious concepts that fundamentally distinguish the industrial age from all other epochs. The official decline of the vernacular conception of Christian life in favor of one organized around pastoral care is complex and drawn-out process constituting the background for a set of consistent shifts in the language and institutional development of the West.

THE ORIGINS OF "MOTHER TONGUE"

When Europe first began to take shape as an idea and as a political reality, between Merovingian times and the High Middle Ages, what people spoke was unproblematic. It was called "romance" or "theodisc" – peoplish. Only somewhat later, *lingua vulgaris* became the common denominator distinguishing popular speech from the Latin of administration and doctrine. Since Roman times, a person's first language was the *patrius sermo*, the language of the male head of the household. Each such *sermo* or speech was perceived as a separate language. Neither in ancient Greece nor in the Middle Ages did people make the modern distinction between mutually understandable dialects and different languages. The same holds true today, for example, at the grass roots in India. What we know today as monolingual communities were and, in fact, are exceptions. From the Balkans to Indochina's western frontiers, it is still rare to find a village in which one cannot get along in more than two or three tongues. While it is assumed that each person has his *patrius sermo*, it is equally taken for granted that most persons speak several "vulgar" tongues, each in a vernacular, untaught way. Thus the vernacular, in opposition to specialized, learned language – Latin for the Church, Frankish for the Court – was as obvious in its variety as the taste of local wines and food, as the shapes of house and hoe, down to the eleventh century. It is at this moment, quite suddenly, that the term mother tongue appears. It shows up in the sermons of some monks from the Abbey of Gorz. The process by which this phenomenon turns vernacular speech into a moral issue can only be touched upon here.

Gorz was a mother abbey in Lorrain, not far from Verdun. Benedictine monks had founded the monastery in the eighth century around bones believed to belong to Saint Gorgonius. During the ninth century, a time of widespread decay in ecclesiastical discipline, Gorz, too, suffered a notorious decline. But only three generations after such scandalous dissolution Gorz became the center of monastic reform in the Germanic areas of the Empire. Its reinvigoration of Cistercian life paralleled the work of the reform abbey of Cluny. Within a century, 160 daughter abbeys throughout the northeastern parts of central Europe were established from Gorz.

It seems quite probable that Gorz was then at the center of the diffusion of a new technology that was crucial for the later imperial expansion of the European powers: the transformation of the horse into the tractor of choice. Four Asiastic inventions – the horseshoe, the fixed saddle and stirrup, the bit, and the cummett (the collar resting on the shoulder) – permitted important and extensive

Dependence on taught mother tongue can be taken as the paradigm of all other dependencies typical of humans in an age of commodity-defined needs.

changes. One horse could replace six oxen. While supplying the same traction, and more speed, a horse could be fed on the acreage needed for one yoke of oxen. Because of its speed, the horse permitted a more extensive cultivation of the wet, northern soils, in spite of the short summers. Also, greater rotation of crops was possible. But even more importantly, the peasant could now tend fields twice as far away from his dwelling. A new pattern of life became possible. Formerly, people had lived in clusters of homesteads; now they could form villages large enough to support a parish and, later, a school. Through dozens of abbeys, monastic learning and discipline, together with the reorganization of settlement patterns, spread throughout this part of Europe.

Gorz lies close to the line that divides Frankish from Romance types of vernacular, and some monks from Cluny began to cross this line. In these circumstances, the monks of Gorz made language, vernacular language, into an issue to defend their territorial claims. The monks began to preach in Frankish, and spoke specifically about the value of the Frankish tongue. They began to use the pulpit as a forum to stress the importance of language itself, perhaps even to teach it. From the little we know, they used at least two approaches. First, Frankish was the language spoken by the women, even in those areas where the men were already beginning to use a Romance vernacular. Second, it was the language now used by Mother Church.

How charged with sacred meanings motherhood was in the religiosity of the twelfth century one can grasp through contemplating the contemporary statues of the Virgin Mary, or from reading the liturgical Sequences, the poetry of the time. The term mother tongue, from its very first use, instrumentalizes everyday language in the service of an institutional cause. The word was translated from Frankish into Latin. Then, as a rare Latin term, it incubated for several centuries. In the decades before Luther, quite suddenly and dramatically, mother tongue acquired a strong meaning. It came to mean the language created by Luther in order to translate the Hebrew Bible, the language taught by schoolmasters to read that book, and then the language that justified the existence of nation states.

THE AGE OF COMMODITY-DEFINED NEEDS

Today, "mother tongue" means several things: the first language learned by the child, and the language which the authorities of the state have decided ought to be one's first language. Thus, mother tongue can mean the first langauge picked up at random, generally a very different speech than the one taught by paid educators and by parents who act as if they were such educators. We see, then, that people are considered as creatures who need to be taught to speak properly in order "to communicate" in the modern world – as they need to be wheeled about in motorized carriages in order to move in modern landscapes – their feet no longer fit. Dependence on taught mother tongue can be taken as the paradigm of all other dependencies typical of humans in an age of commodity-defined needs. And the ideology of this dependence was formulated by Nebrija. The ideology which claims that human mobility depends not on feet and open frontiers, but on the availability of "transportation" is only slightly more than a hundred years old. Language teaching created employment long ago; macadam and the suspended coach made the conveyance of people a big business only from about the middle of the 18th century.

THE COST OF TAUGHT MOTHER TONGUE

As language teaching has become a job, it has begun to cost a lot of money. Words are now one of the two largest categories of marketed values that make up the gross national product (GNP). Money decides what shall be said, who shall say it, when and what kind of people shall be targeted for the messages. The higher the cost of each uttered word, the more determined the echo demanded. In schools people learn to speak as they should. Money is spent to make the poor speak more like the wealthy, the sick more like the healthy, and the minority more like the majority. We pay to improve, correct, enrich, update the language of children and of their teachers. We spend more on the professional jargons that are taught in college, and more yet in high schools to give teenagers a smattering of

these jargons; but just enough to make them feel dependent on the psychologist, druggist, or librarian who is fluent in some special kind of English. We go even further: we first allow standard language to degrade ethnic, black, or hillbilly language, and then spend money to teach their counterfeits as academic subjects. Administrators and entertainers, admen and newsmen, ethnic politicians and "radical" professionals, form powerful interest groups, each fighting for a larger slice of the language pie.

I do not really know how much is spent in the United States to make words. But soon someone will provide us with the necessary statistical tables. Ten years ago, energy accounting was almost unthinkable. Now it has become an established practice. Today you can easily look up how many "energy units" have gone into growing, harvesting, packaging, transporting, and merchandising one edible calory of bread. The difference between the bread produced and eaten in a village in Greece and that found in an American supermarket is enormous – about forty times more energy units are contained in each edible calory of the latter. Bicycle traffic in cities permits one to move four times as fast as on foot for one-fourth of the energy expended – while cars, for the same progress, need 150 times as many calories per passenger mile. Information of this kind was available ten years ago, but no one thought about it. Today, it is recorded and will soon lead to a change in people's outlook on the need for fuels. It would now be interesting to know what language accounting looks like, since the linguistic analysis of contemporary language is certainly not complete, unless for each group of speakers we know the amount of money spent on shaping the speech of the average person. Just as social energy accounts are only approximate and at best allow us to identify the orders of magnitude within which the relative values are found, so language accounting would provide us with data on the relative prevalence of standardized, taught language in a population – sufficient, however, for the argument I want to make.

CLASS-SPECIFIC DESTRUCTION OF VERNACULAR SPEECH

But mere per capita expenditure employed to mold the language of a group of speakers does not tell us enough. No doubt we would learn that each paid word addressed to the rich costs, per capita, much more than words addressed to the poor. Watts are actually more democratic than words. But taught language comes in a vast range of qualities. The poor, for instance, are much more blared at than the rich, who can buy tutoring and, what is more precious, hedge on their own high class vernacular by purchasing silence. The educator, politician and entertainer now come with a loudspeaker to Oaxaca, to Travancore, to the Chinese commune, and the poor immediately forfeit the claim to that indispensable luxury, the silence out of which vernacular language arises.

THE "PRODUCTION" OF MOTHER TONGUE

Yet even without putting a price tag on silence, even without the more detailed language economics on which I would like to draw, I can still estimate that the dollars spent to power any nation's motors pale before those that are now expended on prostituting speech in the mouth of paid speakers. In rich nations, language has become incredibly spongy, absorbing huge investments. High expenditures to cultivate the language of the mandarin, the author, the actor, or the charmer have always been a mark of high civilization. But these were efforts to teach elites special codes. Even the cost of making some people learn secret languages in traditional societies is incomparably lower than the capitalization of language in industrial societies.

In poor countries today, people still speak to each other without the experience of capitalized language, although such countries always contain a tiny elite who manage very well to allocate a larger proportion of the national income for their prestige language. Let me ask: What is different in the everyday speech of groups whose language has received – or shall I say absorbed? resisted? survived? suffered? enjoyed? – huge investments, and the speech of people whose language has remained outside the market? Comparing these two worlds of language, I want to focus my curiosity on just one issue that arises in this context. Does the structure and function of the language itself change with the rate of investment? Are these alterations such that all languages that absorb funds show changes in the same direction? In this introductory exploration of the subject, I cannot demonstrate that this is the case. But I do believe my arguments make both propositions highly probable, and show that structurally oriented language economics are worth exploring.

Taught everyday language is without precedent in preindustrial cultures. The current dependence on paid teachers and models of ordinary speech is just as much a unique characteristic of industrial economies as dependence on fossil fuels. The need for taught mother tongue was discovered four centuries earlier, but only in our generation have both language and energy been effectively treated as worldwide needs to be satisfied for all people by planned, programmed production and distribution. Because, unlike the vernacular of capitalized language we can reasonably say that it results from production.

VERNACULAR LEARNING AS SUBSISTENCE ACTIVITY

Traditional cultures subsisted on sunshine, which was captured mostly though agriculture. The hoe, the ditch, the yoke, were basic means to harness the sun. Large sails or waterwheels were known, but rare. These cultures that lived mostly on the sun subsisted basically on vernacular values. In such societies, tools were essentially the prolongation of arms, fingers, and legs. There was no need for the production of power in centralized plants and its distant distribution to clients. Equally, in these essentially sun-powered cultures, there was no need for language production. Language was drawn by each one from the cultural environment, learned from the encounter with people whom the learner could smell and touch, love or hate. The vernacular spread just as most things and services were shared, namely, by multiple forms of mutual reciprocity, rather than clientage to the appointed teacher or professional. Just as fuel was not delivered, so the vernacular was never taught. Taught tongues did exist, but they were rare, as rare as sails and sills. In most cultures, we know that speech resulted from conversation embedded in everyday life, from listening to fights and lullabies, gossip, stories, and dreams. Even today, the majority of people in poor countries learn all their language skills without any paid tutorship, without any attempt whatsoever to teach them how to speak. And they learn to speak in a way that nowhere compares with the self-conscious, self-important, colorless mumbling that, after a long stay in villages in South America and Southeast Asia, always shocks me when I visit an American college. I feel sorrow for those students whom education has made tone deaf; they have lost the faculty for hearing the difference between the dessicated utterance of standard television English and the living speech of the unschooled. What else can I expect, though, from people who are not brought up at a mother's breast, but on formula? – on tinned milk, if they are from poor families, and on a brew prepared under the nose of Ralph Nader if they are born among the enlightened? For people trained to choose between packaged formulas, mother's breast appears as just one more option. And in the same way, for people who were intentionally taught to listen and to speak, untutored vernacular seems just like another, albeit less developed, model among many.

TAUGHT MOTHER TONGUE AS A COMMODITY

But this is simply false. Language exempt from rational tutorship is a different kind of social phenomenon from language that is purposefully taught. Where untutored language is the predominant marker of a shared world, a sense of power within the group exists, and this sense cannot be duplicated by language that is delivered. One way this difference shows is the sense of power over language itself, over its acquisition. Even today, the poor in nonindustrial countries all over the world are polyglot. My friend, the goldsmith in Timbuktu, speaks Songhay at home, listens to Bambara on the radio, devotedly and with some understanding says his prayers five times a day in Arabic, gets along in two trade languages on the Souk, converses in passable French that he picked up in the army – and none of these languages was formally taught him. He did not set out to learn these tongues; each is one style in which he remembers a peculiar set of experiences that fits into the frame of that language. Communities in which monolingual people prevail are rare except in three kinds of settings: tribal communities that have not really experienced the late neolithic, communities that for a long time lived through exceptional forms of discrimination, and among the citizens of nation-states that, for several generations, have enjoyed the benefits of compulsory schooling. To take it for granted that most people are monolingual is typical of the members of the middle class. Admiration for the vernacular polyglot unfailingly exposes the social climber.

VERNACULAR CULTURE ENHANCED BY TAUGHT LANGUAGE

Throughout history, untutored language was prevalent, but hardly ever the only kind of language known. Just as in traditional cultures some energy was captured through windmills and canals, and those who had large boats or those who cornered the right spot on the brook could use their tool for a net transfer of power to their own advantage, so some people have always used a taught language to corner some privilege. But such additional codes remained either rare and special, or served very narrow purposes. The ordinary language, until Nebrija, was prevalently vernacular. And this vernacular, be it the ordinary colloquial, a trade idiom, the language of prayer, the craft jargon, the language of basic accounts, the language of venery or of age (for example, baby talk) was learned on the side, as part of meaningful everyday life. Of course, Latin or Sanskrit were formally taught to the priest, court languages such as Frankish or Persian or Turkish were taught to the future scribe. Neophytes were formally initiated into the language of astronomy, alchemy, or late masonry. And, clearly, the knowledge of such formally taught languages raised a man above others, somewhat like the saddle lifts the free man above the serf in the infantry, or the bridge lifts the captain above the crew. But even when access

to some elite language was unlocked by a formal initiation, it did not necessarily mean that language was being taught. Quite frequently, the process of formal initiation did not transfer to the initiate a new language skill, but simply exempted him henceforth from a tabu that forbade others to use certain words, or to speak out on certain occasions. Male initiation in the language of the hunt or of sex is probably the most widespread example of such a ritually selective language detabuization.

But, in traditional societies, no matter how much or how little language was taught, the taught language rarely rubbed off on vernacular speech. Neither the existence of some language teaching at all times nor the spread of some language through professional preachers or comedians weakens my main point: Outside of those societies that we now call Modern European, no attempt was made to impose on entire populations an everyday language that would be subject to the control of paid teachers or announcers. Everyday language, until recently, was nowhere the product of design; it was nowhere paid for and delivered like a commodity. And while every historian who deals with the origins of nation-states pays attention to the imposition of a national tongue, economists generally overlook the fact that this taught mother tongue is the earliest of specifically modern commodities, the model of all "basic needs" to come.

COUNTERFEIT VERNACULAR AND OTHER DESTRUCTIONS

Before I can go on to contrast taught colloquial speech and vernacular speech, costly language and that which comes at no cost, I must clarify one more distinction. Between taught mother tongue and the vernacular I draw the line of demarcation somewhere else than linguists when they distinguish the high language of an elite from the dialect spoken in lower classes, somewhere other than the frontier that separates regional and superregional languages, somewhere else than restricted and corrected code, and somewhere else than at the line between the language of the literate and the illiterate. No matter how restricted within geographic boundaries, no matter how distinctive for a social level, no matter how specialized for one sex role or one caste, language can be either vernacular (in the sense in which I here use the term) or of the taught variety. Elite language, trade language, second language, local idiom, are nothing new. But each of these can be formally taught and the taught counterfeit of the vernacular comes as a commodity and is something entirely new.

The contrast between these two complementary forms is most marked and important in taught everyday language, that is, taught colloquial, taught standardized everyday speech. But here again we must avoid confusion. Not all standard language is either grammar-ridden or taught. In all of history, one mutually understandable dialect has tended toward predominance in a given region. This kind of principal dialect was often accepted as the standard form. It was indeed written more frequently than other dialects, but not, for that reason, was it taught. Rather, diffusion occurred through a much more complex and subtle process. Midland English, for example, slowly emerged as that second, common style in which people born into any English dialect could also speak their own tongue. Quite suddenly, the language of Mogul hordes (Urdu) came into being in northern India. Within two generations, it became the standard in Hindustan, the trade language in a vast area, and the medium for exquisite poetry written in the Arabic and Sanskrit alphabets. Not only was this language not taught for several generations, but poets who wanted to perfect their competence explicitly avoided the study of Hindu-Urdu; they explored the Persian, Arabic, or Sanskrit sources that had originally contributed to its being. In Indonesia, in half a generation of resistance to Japanese and Dutch, the militant fraternal and combative slogans, posters, and secret radios of the freedom struggle spread Malay competence into every village, and did so much more effectively than the later efforts of the ministry of Language Control that was established after independence.

TECHNICAL INNOVATION AND THE VERNACULAR

It is true that the dominant position of elite or standard language was always bolstered by the technique of writing. Printing enormously enhanced the colonizing power of elite language. But to say that because printing was invented elite language is destined to supplant vernacular variety results from a debilitated imagination – like saying that after the atom bomb only super powers shall be sovereign. The historical monopoly of educational bureaucracies over the printing press is no argument that printing techniques cannot be used to give new vitality to written expression and new literary opportunity to thousands of vernacular forms. The fact that the printing press could augment the extent and power of ungovernable vernacular readings was the source of Nebrija's greatest concern and of his argument against the vernacular. The fact that printing was used since the early 16th century (but not during the first forty years of its existence) primarily for the imposition of standard colloquials does not mean that printed language must always be a taught form. The commercial status of taught mother tongue, call it national language, literary standard, or television language, rests largely on unexamined

Every single attempt to substitute a universal commodity for a vernacular value has led, not to equality, but to a hierarchical modernization of poverty.

axioms, some of which I have already mentioned: that printing implies standardized composition; that books written in the standard language could not be easily read by people who have not been schooled in that tongue; that reading is by its very nature a silent activity that usually should be conducted in private; that enforcing a universal ability to read a few sentences and then copy them in writing increases the access of a population to the content of libraries: these and other such illusions are used to enhance the standing of teachers, the sale of rotary presses, the grading of people according to their language code and, up to now, an increase in the GNP.

THE RADICAL MONOPOLY OF TAUGHT MOTHER TONGUE

Vernacular spreads by practical use; it is learned from people who mean what they say and who say what they mean to the person they address in the context of everyday life. This is not so in taught language. With taught language, the one from whom I learn is not a person whom I care for or dislike, but a professional speaker. The model for taught colloquial is somebody who does not say what he means, but who recites what others have contrived. In this sense, a street vendor announcing his wares in ritual language is not a professional speaker, while the king's herald or the clown on television are the prototypes. Taught colloquial is the language of the announcer who follows the script that an editor was told by a publicist that a board of directors had decided should be said. Taught colloquial is the dead, impersonal rhetoric of people paid to declaim with phony conviction texts composed by others, who themselves are usually paid only for designing the text. People who speak taught language imitate the announcer of news, the comedian of gag writers, the instructor following the teacher's manual to explain the textbook, the songster of engineered rhymes, or the ghost-written president. This is language that implicitly lies when I use it to say something to your face; it is meant for the spectator who watches the scene. It is the language of farce, not of theater, the language of the hack, not of the true performer. The language of media always seeks the appropriate audience profile that the sponsor tries to hit and to hit hard. While the vernacular is engendered in me by the intercourse between complete persons locked in conversation with each other, taught language is syntonic with loud speakers whose assigned job is gab.

The vernacular and taught mother tongue are like the two extremes on the spectrum of the colloquial. Language would be totally inhuman if it were totally taught. That is what Humboldt meant when he said that real language is speech that can only be fostered, never taught like mathematics. Speech is much more than communication, and only machines can communicate without reference to vernacular roots. Their chatter with one another in New York now takes up about three-quarters of the lines that the telephone company operates under a franchise that guarantees access by people. This is an obvious perversion of a legal privilege that results from political aggrandizement and the degradation of vernacular domains to second-class commodities But even more embarrassing and depressing than this abuse of a forum of free speech by robots is the incidence of robot-like stock phrases that blight the remaining lines on which people presumably "speak" to each other. A growing percentage of speech has become mere formula in content and style. In this way, the colloquial moves on the spectrum of language increasingly from vernacular to capital-intensive "communication," as if it were nothing more than the human variety of the exchange that also goes on between bees, whales, and computers. True, some vernacular elements or aspects always survive – but that is true even for most computer programs. I do not claim that the vernacular dies; only that it withers. The American, French, or German colloquials have become composites made up of two kinds of language: commoditylike taught uniquack and a limping, ragged, jerky vernacular struggling to survive. Taught mother tongue has established a radical monopoly over speech, just as transportation has over mobility or, more generally, commodity over vernacular values.

TABUS

A resistance, sometimes as strong as a sacred tabu, prevents people shaped by life in industrial society from recognizing the difference with which we are dealing – the difference between capitalized language and the vernacular, which comes at no

economically measurable cost. It is the same kind of inhibition that makes it difficult for those who are brought up within the industrial system to sense the fundamental distinction between nurture from the breast and feeding by bottle, between literature and textbook, between a mile moved on my own and a passenger mile – areas where I have discussed this issue over the past years.

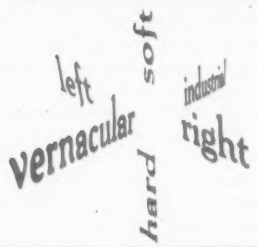
Most people would probably be willing to admit that there is a huge difference in taste, meaning, and satisfaction between a home-cooked meal and a TV dinner. But the examination and understanding of this difference can be easily blocked, especially among those committed to equal rights, equity and service to the poor. They know how many mothers have no milk in their breasts, how many children in the South Bronx suffer protein deficiencies, how many Mexicans – surrounded by fruit trees – are crippled by vitamin deficits. As soon as I raise the distinction between vernacular values and values susceptible of economic measurement and, therefore, of being administered, some self-appointed tutor of the so-called proletariat will tell me that I am avoiding the critical issue by giving importance to noneconomic niceties. Should we not seek first the just distribution of commodities that correlate to basic needs? Poetry and fishing shall then be added without more thought or effort. So goes the reading of Marx and the Gospel of St. Matthew as interpreted by the theology of liberation.

A laudable intention here attempts an argument that should have been recognized as illogical in the nineteenth century, and that countless experiences have shown false in the twentieth. So far, every single attempt to substitute a universal commodity for a vernacular value has led, not to equality, but to a hierarchical modernization of poverty. In the new dispensation, the poor are no longer those who survive by their vernacular activities because they have only marginal or no access to the market. No, the modernized poor are those whose vernacular domain, in speech and in action, is most restricted – those who get least satisfaction out of the few vernacular activities in which they can still engage.

THE MUSHROOMING SHADOW ECONOMY

The second-level tabu which I have set out to violate is not constituted by the distinction between the vernacular and taught mother tongue, nor by the destruction of the vernacular through the radical monopoly of taught mother tongue over speech, nor even by the class-biased intensity of this vernacular paralysis. Although these three matters are far from being clearly understood today, they have been widely discussed in the recent past. The point at issue which is sedulously overlooked is quite other: Mother tongue is taught increasingly, not by paid agents, but by unpaid parents. These latter deprive their own children of the last opportunity to listen to adults who have something to say to each other. This was brought home to me clearly, some time ago, while back in New York City in an area that a few decades earlier I had known quite well, the South Bronx. I went there at the request of a young college teacher, married to a colleague. This man wanted my signature on a petition for compensatory prekindergarten language training for the inhabitants of a partially burnt-out, high-rise slum. Twice already, quite decidedly and yet with deep embarrassment, I had refused. To overcome my resistance against this expansion of educational services, he took me on visits to brown, white, black, mostly single-parent so-called households. I saw dozens of children dashing through uninhabitable cement corridors, exposed all day to blaring television and radio in English, Spanish and even Yiddish. They seemed equally lost in language and landscape. As my friend pressed for my signature, I tried to argue for the protection of these children against further castration and inclusion in the educational sphere. We talked at cross-purposes, unable to meet. And then, in the evening, at dinner in my friend's home, I suddenly understood why. This man, whom I viewed with awe because he had chosen to live in this hell, had ceased to be a parent and had become a total teacher. In front of their own children this couple stood *in loco magistri.* Their children had to grow up without parents, because these two adults, in every word they addressed to their two sons and one daughter, were "educating" them – they were at dinner constantly conscious that they were modeling the speech of their children, and asked me to do the same.

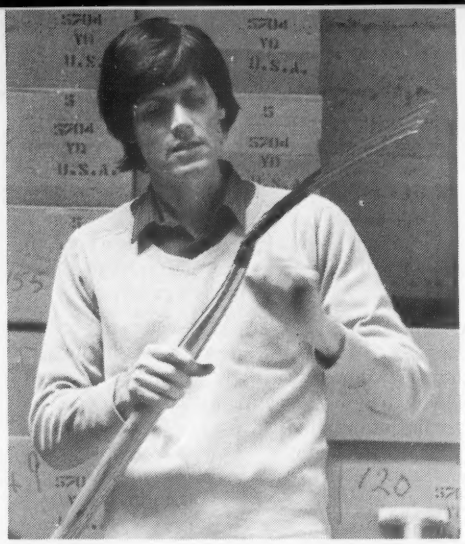
For the professional parent who engenders children as a professional lover, who volunteers his semi-professional counselling skills for neighborhood organizations, the distinction between his unpaid contribution to the managed society and what could be, in contrast, the recovery of vernacular domains, remains meaningless. He is fit prey for a new type of growth-oriented ideology – the planning and organization of an expanding shadow economy, the last frontier of arrogance which *homo economicus* faces. ■



What's Economical?

by Paul G. Hawken

What we have now is a credit crunch. Look for a credit collapse in 1983. Both are the expectable stress of transition from one economy to another.



Two different economies exist in tandem in the United States: the mass economy, the mass production and consumption of material goods – the economy of the industrial age; and the informative economy, an economy in which the amount of materials that are personally consumed is reduced and the quality of goods and services is enhanced. In this article we will look at what the mass economy is, why it is beginning to both contract and distort, what the effect of this is on individuals, how it is affecting the total economy, and, finally, what the informative economy is and how to make the transition to it, both personally and on a larger scale.

The past decade has witnessed the culmination of the mass economy. Over the past 200 - 300 years, a vast world-wide (and imperialist) network of governments, corporations and financial institutions has been created with the purpose of moving, mining, exploiting, digging, cutting and cropping vast amounts of material in order to manufacture and assemble it into products which are then sold all over the world. Minerals, rubber, lumber, foodstuffs, oil, coal are reconstituted into a plethora of products, including cars, plastic toys, stereos, houses, appliances, factories and gumballs. Stuff. There really is a lot of it around. Basically, the way to make money for centuries has been to obtain a good supply of stuff at low cost and sell it for a higher price. It worked for Imperial England, for Carnegie, for Rockefeller, Onassis, Getty and the Hunt brothers. It still works.

While this orgy of mass shuffling has been going on, two important factors have changed the game: the world population has galloped ahead; and some of the resources that we have long depended upon for creating the mass economy are coming into short supply or are located in remote or "unfriendly" places, which is tantamount to being in short supply. The twin effect of these events is to radically alter the (mass) economy in quick, almost startling ways, and the results of these changes are being felt by virtually everyone in the civilized world today.

Although there were predictions as early as 1950 that there would be large resource shortages within ten or twenty years, most warnings were ignored until the 1970s when OPEC made the point simply and forcefully. A cartel depends on one assumption – that it can control enough of a resource to insure a quasi-monopoly. Nothing has successfully challenged the OPEC assumption yet, and the world has painfully grown to accept the notion that the materials from which the mass economy created prosperity might indeed be limited.

Up until this time, the leading theory governing the mass economy was Keynesian economics. Original Keynesian economic theory (which even Keynes had doubts about) said that the government could manage a mass economy by stimulating or restricting demand for products through the control of credit. If our economy becomes sluggish, the U.S. government loosens up on credit through the Federal Reserve Bank. Money is easier to get (and spend), production rises, goods flow out, employment increases and prosperity blossoms. When the spending spree gets out of hand and people begin to spend more than they are making, prices go up, inflation starts, and the government tightens credit so that it is harder to borrow, harder to spend, and the economy slows down, usually into a recession with its accompanying unemployment.

Since 1973-4, however, Keynesian economic theory has not accurately predicted economic events. It was and is a system imposed upon a culture through government, and now the culture is resisting the system, in large part because the culture knows what the theory doesn't know – that we are coming to an end of an era of cheap resources. What our government has tried to do since the so-called oil crisis is to impose Keynesian theory ever more forcefully and fitfully, feeling (I suppose) that if a light tap didn't work, a good knock would. And what the government has accomplished in trying to apply Keynesian economics in a time when the principles are no longer applicable is to create uncontrollable

Practicing what he preaches, Paul Hawken deals in fine tools. Smith & Hawken, Palo Alto, California, imports such durable items as this garden fork from the 200-year-old British firm, Bulldog (they invented the spade). Years ago he was the founder of Erewhon, the most successful mail order supplier of natural foods. He was Jerry Brown's economic adviser during the recent Presidential campaign. –SB

inflation and an economy which also seems out of anyone's control. Why?

Up until recently there was a certain logic and balance to the way capital translated into mass and mass into capital. This was called the "return on investment" (R.O.I.). As long as capital "grew" at a steady rate every year, it was considered a sound investment, and as long as resources were plentiful, only moderate amounts of capital were required in order to make the mass economy grow. This was because growth was slower and because profits were sufficient to generate cash internally without requiring great amounts of outside capital. However, during the past decade the ability of the economy to grow with conventional amounts of capital has lagged considerably, thus producing lowered productivity and higher inflation.

As the mass economy culminates, there are fewer resources to supply a world of exponentially growing popular demand. The price for goods starts to rise, not only because demand rises faster than production, but because governments, especially the U.S. government, are continually priming the growth pump by supplying large amounts of capital through credit and government spending, creating too much money. So while natural resources tarry, if not dwindle, consumers flush with excess cash buy, and the two meet inexorably in inflation. As inflation increases in rate and percentage, currency goes down in value. At our present rate of approximately 20% inflation, a dollar is worth half as much in 42 months. If currency goes down by half in 42 months, what is a "good" investment?

Some people have come to me, heirs and heiresses, who want to invest, preserve or increase their capital. People who have made their money usually know what to do with it, but people who have been given capital sometimes don't. Those I talk to are torn between doing "good" with their money and making sure they keep the stuff. Most end up trying to keep it on the rationale that if they preserve its value, it will be around to do "good" later. They are trying to get their money through the eye of a needle which they sense up ahead.

These people, heirs of the mass economy, know that the mass economy is coming to an end, and they know that different alternative structures have to be created if we are going to have a sustainable social order on the other side of the needle. But how to do it? What do you do? Do you try to "prosper during bad times?" Or do you attempt to create a new era of "good times" and maybe go broke in the process?

When my grandfather, who was a conservative Republican executive, invested his money, he thought he had made a pretty smart move when he earned 2 - 3% per year on his investment. In 25 years, if he earned back the amount of his original investment, he had a good thing going. After all, the 26th year was all gravy. And, of course, he had that kind of rhythm and approach to life. He walked to the train. He walked to his steel and cable company even though he was a vice-president and could afford other means of transportation. And he always talked slowly and in measured terms. I suspect that he and all his Mason brethren who captained much of San Francisco business acted pretty much the same. Conservative. Cautious.

Ironically, such conservativism and caution is what we need now in the economic climate in order to create a sustainable, conserver society. Instead, we have exactly the opposite situation. A go-go economy that is within a few years of blowing oft, a time in which inflation will worsen and a time in which there will be fewer and fewer intelligent things to do with money. The velocity of capital is matching the psychology of the times. As money moves into shorter-term securities, it turns over faster and faster, moving to gold one month, then to equities, then to money market securities, followed by a quick run up in English bonds, back to the play in platinum, into South African gold stocks, and then over to wheat futures as you've just heard that Argentina is having a terrible drought. For some people, all that is fun. But for others, it is a hair-raising excursion.

I am reminded of the two children in *La Dolce Vita* who, on the circus grounds at dawn, "see" the Virgin. They run to one place pointing to this invisible entity which only they can see, and when everyone has run over to look, they run off, saying, no, she is over here, over here. . . . Read any investment advisory, and there they are – running after the Virgin. If it seems illusory and bewilderingly complex and irrational, it is. The mass economy is reaching a climax stage, and in the process, the bodily fibrillations can be seen in the volatile and unusual oscillations of capital through the system.

The mass economy is peaking in size and at the same time beginning to break apart; in order for it to grow, it has to spin faster and faster. This velocity is the result of the rate at which capital must be fed into the mass economy in order to make it grow at all. There comes a point at which increasing amounts of capital have decreasing results, and we have long reached and passed that point. Instead of seeing growth, greater mass, we are seeing critical mass, the point at which the economy begins to break apart and a new economic order must begin to arise. Since the only response governments know is to throw greater amounts of capital at the economy in order to make it grow again, the inflow of capital is producing worldwide inflation. In other words, a throw-away economy is throwing itself away.

In March, 1980 the Carter administration, fearing

this breaking apart of the mass economy, decided to apply economic correctives.[1] This was done largely through the most restrictive credit controls the nation has seen since World War II, which in turn has resulted in a classic credit crunch. When prices are rising, we are in a greed cycle, and when they drop – as they have in the past few weeks – we are seeing a pole shift to the fear cycle. The greed cycle peaked toward the end of last year with the rapid rise in silver and gold. It was a good old-fashioned rollicking speculative run-up with the two Hunt brothers from Texas leading the way as they cornered one-third of the free world's silver. When the Federal Reserve Board increased interest rates to their recent highs, speculators who had borrowed to participate in the gold and silver frolic had to start selling. As they did, the prices fell. It is what happens in a credit crunch, and this one was no exception.

As the prices fell, the Hunts, who had borrowed deeply on their expensive silver, found themselves asked to cover the margins on their own speculative purchases of silver. At one point they were being asked for $100 million a day to cover their silver losses and had to sell stocks and some oil properties in order to do so, putting pressure on the stock market as a whole. When they could no longer come up with that kind of cash, their broker, Bache, sold many of their silver contracts in one day, and produced the silver crash of 1980. I mention all this in passing because it illustrates what will trigger the end of the mass economy: credit. Even the Hunts, considered to be some of the shrewdest financiers around, got caught by the credit squeeze and lost in March, on paper, somewhere between two and four billion dollars because of it.

This particular credit crunch was a mild one because there is only a mild case of fear right now – at least at this writing (April). Also, with the exception of silver and, before that, bonds, most of the markets had not been run up to historical highs from which they could crash. If this is all that happens in 1980, it will be merely a credit crunch and the economy will skip gaily on. But in the past few weeks, we have been given a shadow glimpse of what lies ahead, a credit collapse.

Although the selling of metals, stocks and bonds has depressed prices and produced real deflationary signs which could lower the rate of inflation to one digit by the end of the year, this lowering of secular inflation does not cure the fundamental causes and forces behind inflation, nor can it cure the deep underlying contraction of the mass economy. What we will probably see this year is inflation and interest rates backing off for awhile. Analysts will interpret this as bullish signals. Bonds will go up, stocks will soar, commodities will also rise. But within 18 to 24 months, we will also see cyclical inflation take hold again, with oil leading the way to at least $50 per barrel. As the inflation heats up, the inflationary psychology will take an even firmer hold, and once more we will see a flight from dollars to fixed and hard assets, a move which always exacerbates inflation.

The question that needs answering is how deeply has inflation turned the American citizen away from productivity and toward speculation? If there were a profound recession now, it could reorient the average citizen toward saving, frugality and lowered spending, particularly since inflation is cutting real income. But if the recession is short-lived and mild, and inflation begins again, John and Jane Average are going to have a tough time believing that the economy as we know it will survive. The continued debasement of currency has caused the average person to turn away from productive investments such as tools, machinery, and new plants, toward real estate, metals, and "collectibles," convinced by the Howard Ruffs and Harry Brownes that a rerun of post-World War I Germany is in the offing. Anyone who bought something a few years ago – a good car, a house, a piece of land – came out looking like a hero. Anyone who scrimped and saved and faithfully put his money into a savings account looked like a fool. If inflation begins again, and everyone tries to look like a hero, we will have a steep run-up in just about every type of market or investment vehicle, and it will all be self-fulfilling in its correctness and soundness. The stock market could rise to 2000 on the Dow-Jones, commodities could easily double or triple, real estate could continue its dizzying spiral, and the population would feel flush in its "growing" assets.

But what has to be remembered in all of this is credit. There is a widespread belief in America that the government can "print" money and then spend it. That is not the case. Unless a madman seizes power or the rules are changed, currency cannot be issued by whim. In order to increase the supply of money which circulates throughout the economy, the Fed increases the funds available which can be borrowed at the discount rate by member banks. The banks, in turn, loan this to their corporate and consumer accounts. Thus, more money circulates in the system and the economy heats up, but not without a hook. The hook is that, technically, this money has to be paid back. Consumers have to pay their bills, their credit cards and their loans, as do corporations. And banks, in turn, have to "pay back" their loans, which means, in effect, that they must constantly recycle this money back through the Federal Reserve.

As long as the economy grows, credit also grows, and no one worries particularly about the ability

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1. The last engineer in the White House was Herbert Hoover, and engineers, like most economists, are prone to see and treat the economy as if it were some kind of machine. If something goes wrong or gets squeaky, you adjust it mechanically. There is nothing inherently dismal about the science of economics, but there is something rather dismal about the world view of those who call themselves economists and, in the case of the President, those who have ultimate responsibility for its care and functioning. What economists, and Carter, fail to see is that the economy is not an abstract sort of collection of credits, debits and quanta but a real living entity invested with all the qualities and attributes we associate with human beings. It is volatile, mysterious, fearful, aggressive, tremulous, uncertain, etc. The economy is the collective conscious of our society and represents the sum of every citizen's decisions in a most precise and democratic manner. It must be treated, therefore, as a living entity, not as a machine.

of the whole to service its debts, whether those debts be consumer, governmental or corporate. But a look at the figures for debt show us a rather startling pattern. In 1970, the G.N.P. was $982 billion. By 1978 it had grown to $2.1 trillion. If you subtract from this total the portion due to service industries, the actual growth in the industrial portion of the economy, that portion which produces goods, was 35%. During that time, our total debt as a nation grew in the following manner:

	1970 (Billions)	1978 (Billions)
Federal Govt.	$ 343	$ 824
State & Local	144	301
Business	686	1,600
Home Mortgages	295	748
	$1.6 trillion	$3.8 trillion

During the time that industrial production rose 35%, debt climbed 138% and the consumer price index increased by 68%. So the result is that debt grew at roughly twice the rate of inflation and four times the rate of real growth. And these three are now very much related, for the only way we can fuel and sustain economic growth in the mass economy is by both inflation and credit, increases which make it increasingly difficult for us to service our debt if ever the economy should stop growing or contract.

Conversely, if credit should contract, the economy would move quickly into a negative growth spiral which might take many years to bottom before ending. This is what lies ahead for the mass economy, given the forces which are presently in place, and there is little, if anything, on the horizon which will or could change this now. Such a rapid contraction of credit, whether it is occasioned by a sharp downturn in the economy or whether it is caused simply by a shift to the Fear Cycle, would be a massive credit collapse in which enormous changes would be wrought in our economy, changes bigger than those experienced in any previous panic or depression since this country began. And since we are presently on the verge of such a collapse (if I were to predict a date, I would say October, 1983, or October, 1987) prudence would dictate that we look at what exactly the results would be.

A credit collapse is simply the opposite of a growth economy. Since the table above illustrates that credit has to be expanded faster than the rate of inflation or real growth rate, a point will soon be reached when our ability to service our debt will be outstripped by the inflationary demands of the economy. We simply won't be able to pay our debts, either as consumers, governments or corporations, and at that point the whole economy exists only by a gentlemen's agreement: I won't call my debts if you don't call yours. But there are unfortunately few gentlemen in the world of business who don't think about their own interests first, and so we can reasonably expect in the future a time when the credit marvel begins to unravel. How it will happen is unknown. It could be triggered by a Saudi coup and a severe reduction in our oil supplies. It could be caused by a financial panic, the exact mechanism that drove the price of silver down from its historical high of $50 to $10 in two months. It could be a round of protective tariffs instigated worldwide. Any and all of these could lead to a credit collapse.[2]

But when a credit collapse does happen, all of the mechanisms that presently inform and move our inflationary economy will reverse. During inflation those who have debt generally do better than those who do not, since they are always paying back in cheaper dollars. By borrowing, small amounts of capital can be leveraged and can double or triple within a year in many markets. Dollars which could go to increasing productivity and jobs go instead to non-productive assets. There is a premium for consuming immediately, since prices will surely be higher later, and a penalty for saving, since money is worth less later, interest included. The more people consume, the faster prices rise, confirming everyone's suspicions, and so people buy now for fear they might not be able to later. They may be right.

The viciousness of this cycle can only be appreciated when one imagines its reversal. Since total debt now exceeds $4 trillion, while the basic amount of money around to service that debt is about one-fifth that much, any collapse of credit or asset values will cause default on debt, bankruptcy both personal and corporate, and a spiralling round of deflation. Those who have cash (not gold) at the end of the spiral will look pretty good. But that won't be easy.[3]

As deflation sets in, the squeeze on credit will cause

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2. Much of the national debt is now held in foreign hands. If confidence in American ability to service or repay that debt should weaken, we could see a sell-off of government-backed bonds which could collapse the bond market which in turn would pull all other markets, including the stock market, with it. The U.S. seizure of Iranian assets last year did nothing to instill short-term confidence in the "good faith" of the American government. While it represents a short-term gain in internal prestige for the Carter administration, it is a serious long-term weakening of national credibility overseas. It should also be noted that many of the American dollars that have gone overseas to pay for our OPEC oil have been re-deposited in American banks and then reloaned to Third World countries, most of which have used the money to buy OPEC oil as well. This recycling of Petrodollars has left the American banking community extremely vulnerable to any default of debt on the part of these countries. At this writing some of them cannot service their existing debt and are trying to borrow more. There are other countries, like Iran or Peru, that may choose, due to political or nationalistic reasons, to default on the debt, saying in effect that it is a sign of imperialist or capitalistic intrusion into their own country's assets. Irrespective of the mechanism, it is doubtful that the U.S. government could insure the loss of deposits sufficiently to prevent a series of major bank failures, leading in turn to many smaller failures nationwide.

3. Howard Ruff contends that the government will issue fiat money at that point, making the dollar almost worthless. He recommends metals as a hedge. I contend that it will happen so fast that the government won't have time to, and that metals will sink in value just as they have within the past two months.

massive unemployment, closings of companies and factories, reductions of government employees to skeletal staffs. There could also be default or suspension of government-backed bonds, sending tremors through the banking community which could cause depositors to demand all of their money at once, resulting in illiquidity and the closing of some bank doors. This has happened before, here and abroad, but never to the extent possible now, because never before has any country incurred so much debt as has America.

In deflation, everyone wants cash; and assets, including gold, silver, and urban real estate, plunge in value. Since there are mostly sellers and few buyers, prices naturally plummet, and oftentimes they go lower than the money which is owed against them, as with mortgages, for example. Everything that worked in an inflationary economy proves to be a curse in a deflationary economy. And making the transition from one to the other is usually quite a ride for most, if not downright painful and wrenching. The way to avoid most of the impact of such a reversal is so old-fashioned that few people will do it: stay out of debt and save. Try to own your home, buy nothing on credit, and live well within your means. That, of course, is not the kind of economic wisdom that is flowing from the media. Even the airline magazine I read the other day had an article entitled "Everyone's Guide to Speculation." The best way to envisage what it would be like after a credit collapse is to imagine your monthly income cut in half and see if you can meet all of your expenses. Then try it with one-fourth your income. Then imagine what would happen to your assets if you were unemployed for a year or more.

The purpose of this exercise is not to plunge you into gloom, nor am I playing Chicken Little. The breaking apart of the mass economy will not happen all at once. It may very well pick itself up and try again over the remaining two decades of this century. But whether it does or not, there is more good news than bad news for in the broadest way, it lays the groundwork for an "informative"[4] economy.

In a mass economy, the goal is to produce the greatest amount of mass (products) with the least amount of labor. In an informative economy, the goal is to produce the greatest amount of information with the least amount of mass. Labor is information; it informs mass. What the informative economy recognizes and encourages is the understanding that it is labor that brings worth and intelligence to mass, not capital as has been thought for these past centuries. But is not labor *per se*, but intelligent labor, work which "imbues or inspires" mass with a higher quality or nature. While the mass economy is an economy ruled by entropy, the informative economy is dominated by the one anti-entropic agent around: intelligence.

The transformation to the informative economy would mean that capital's role would be to make itself less necessary. In other words, capital would be used to create businesses that ultimately do not

4. Why the word "informative" to describe an economy? To inform does not mean merely to supply data. Webster's defines "inform" as "to give, imbue, or inspire with some quality or nature."

ADVICE TO CARTER

Although part of Carter's anti-inflation program is credit controls, the other part is the restriction of money supply through Chairman of the Federal Reserve Board, Paul Volcker. If Carter and Volcker persist in trying to control the money supply, they will be the first to do so in over twenty years. Many presidents have promised to control the money supply, but none have had the courage to do so at election time or when a recession started to bite too deeply. Since October Volcker has pretty much stuck to his monetary reduction, but any number of conditions including a "small" war in Iran could completely alter those intentions. In order to finance a rapid buildup of the defense budget, money would have to flow again into the banks from the Federal Reserve. To avoid a credit collapse, I offer the following suggestions to Carter or his replacement:

1.
A three-year, phased-in 15% cutback in government spending followed by real growth matching population growth. The size of government spending is distorting the economy since it is non-productive spending. Almost half of the Federal budget is for transfer payments back to individuals and it goes to 45% of the population. As government and transfer payments grow, opportunities for people to work and support themselves will wither. (This excludes revenues from item No. 8.)

2.
Not only a balanced budget, but a reduction of national debt. Carter has not so much balanced the budget as he has raised taxes. This year, primarily because of inflation, taxes will increase by $100 billion, the largest increase in the history of the United States. The irony is that if inflation were to stop tomorrow, the government would have the largest deficit of its history. Carter has balanced a budget, to slow inflation, which absolutely depends on a high rate of inflation in order to balance.

3.
Federal income taxes should be in indexed, as they are in California, to remove part of the vested interest government has in maintaining inflation.

4.
Instead of withholding taxes from savings, as Carter suggests, savings interest should be tax-free up to a reasonable amount so as to encourage savings rather than spending, investment rather than speculation. Because of taxes and inflation, all who save lose at present.

5.
Same with dividends, up to a reasonable amount.

6.
There should be a tax write-off of 7% of the purchase price on American made cars which get over 35 m.p.g. now, and higher mileage figures as the years go on. On cars that get under 20 m.p.g., there should be a 7% tax.

7.
Federal lands contain nearly 50% of the potential gas and oil reserves. A National Energy Company should be created to explore and develop those lands. Profits should go directly toward renewable energy sources.

8.
Instead of a 50 cent per gallon gasoline tax as Anderson suggests, we

require outside capital nor large amounts of internally generated capital. That means that although new businesses and enterprises would "grow" just as any business to a certain size, they would do so at considerable expense to larger industries which they would supplant. So the informative economy would be an overall contraction of capacity in order to create an overall increase in quality and intelligence in products. But this contraction would not be as large as it might appear on the surface.

The mass economy hides everyone's function within the folds of large industries, all of which seem as important as the next. It is hard to get reliable estimates, but it seems that in the food industry for example, we are told that the average American farmer feeds fifty people, making him the most efficient fellow in the world. There is much crowing about this, but it obscures the fact that an estimated 18 - 20% of the population in America is directly or indirectly involved with food in some way, which means that the ratio is more like one in five to feed the populace. That figure is not so unusual and throws the productivity of the food industry into a new light. In the informative economy, this ratio may change very little. Twenty per cent of the populace might still produce our food, but in a very different manner. Now we have people drilling oil which is trucked to refineries where it is made into fertilizers which are sold to distributors who sell the fertilizer (and a machine to apply it) to a farmer who uses it.

In the informative economy, there would be more farmers with smaller holdings. Fertilization would be by crop rotation and manure, and since the farmer would or could not rely on outside agents for fertility or in the case of pesticides, crop protection, he would build up his soil to make his plants stronger, choose more resistant varieties of seedstock, plant hedgerows around the edge of his orchard to insure a good bird population to fight insects, and constantly learn how to make his farm work more intelligently. His sons and daughters would learn from him and hopefully make improvements. If this sounds like a flight to the past, it is so only in quality. The farmer would also use all of the knowledge that is current concerning weather, soil science, trace mineral deficiencies, and animal husbandry.

In terms of labor skills, there is a pronounced shift from a mass economy to an informative economy. In the mass economy, differences in skill and ability are leveled by machinery, automation, computerization, and the bureaucratization of institutions. However differences in levels of skill and service become rapidly apparent in a decentralized economy, where goods and services tend to be deployed on a more one-to-one basis. There is also a shift in the value of labor. In the mass economy, labor has gone higher in supposed value, while the goods that labor can buy have gone down in quality, durability, and workmanship. The reverse means that more labor will go into each item at a lower cost or value (in classical economics that would mean that productivity has gone down; informative economics would say that the amount of information per product has gone up) meaning that relative value between labor and material is radically altered. A person will be able to buy fewer objects, but the objects will be of higher quality. All of this suggests a

should do something more radical. Firstly, the President should set both monthly and yearly goals for a massive reduction of domestic dependence on OPEC oil. And these goals should be as widely publicized as the Dow-Jones, and for good reason. If the goals are not met, then taxes are slapped on until consumption falls to that level. If it takes $3 per gallon to reduce our foreign dependence to 25% of what we import today, that would be the tax. The revenues from these taxes would take $60 billion out of overseas hands (a continuing source of dollar weakness and inflation) and keep them home. These dollars, along with the money earned from the National Energy Company, would also be recycled into sustainable sources of energy, primarily by tax incentives for consumers who retrofit, or conserve, as well as a conservation rebate.

9.
A conservation rebate from gas taxes. This would amount to several hundred dollars per person. A conservation rebate would reward conservers and penalize flagrant consumption. After setting national goals for energy consumption, 50 cents per gallon of the overall tax would be considered paid in by every user into the conservation rebate. The tax would be returned to all according to the per capita goals established. Those who use less would be getting a refund, those who use more would have paid more. It is fair, encourages conservation, and would bring some of the "underground economy" back onto the tax rolls since they would be getting a refund overall.

10.
Defense spending should shift emphasis from nuclear and sophisticated aircraft toward "precisioned guided munitions" which could empower a decentralized militia, both here and abroad along the "Brossollet Concept." Smaller weapons in the hands of smaller groups of people, particularly in Europe, would be a more effective deterrent than any megakill. Nuclear weaponry is already overbuilt, and the U.S. defense budget should be shared with the countries it supposedly is protecting, further reducing defense costs and the budget.

11.
Finally, to increase overall efficiency, the breaking up of large businesses and the formation of smaller companies should be encouraged through tax incentives. U.S. Treasury Department statistics have shown that small businesses are three times more effective in deploying their assets than are large businesses. The myth of efficiency in large-scale operations is one we can no longer afford. People who invest their own money in their businesses or employees who invest in employee-owned businesses should get 100% write-offs for those investments, while larger corporations should be progressively taxed according to their lack of efficiency in terms of capital, assets, and resources. Inefficient giants would be forced to sell off their less efficient units, making them available to smaller groups and former employees who could buy these factories through government guaranteed loans. Meanwhile, smaller businesses and farms would flourish. We would be using our diminishing resources and assets three times more efficiently.

simple, albeit simplistic, formula following upon the Fullerism that "Less is more." Mass diminishes intelligence, whereas intelligence enhances mass. In other words, when we are surfeited with a glut of goods, there is little motivation to inform those goods with intelligence.

In an informative economy, we switch from an affluent society to an influent one.[5] If you are affluent, goods and services flow toward you; if you are influent, the information and meaning contained within goods flows into you. Affluence amasses, influence processes.

How does an informative economy use less mass than the mass economy? Taking tools for example, which are dear to my heart, compare a low-line spade from the mass economy which you can pick up at the discount store for $7.99 with a forged spade made of high carbon, hand-tempered steel which costs $25.00. If used a lot, the first tool will last less than a year. The second will last between fifty and one hundred. Using the lower figure, that means that there is 1/50th of the mass in the forged tool as in the consumer tool. There are Japanese chisels made by masters which can last through two centuries of hard use. I have heard of old tools being returned to Sheffield Steelworks after ninety years because the handle broke. In contrast to the mass economy, an object made in the informative economy is characterized by intelligent design, and durable materials. It is built to last longer, constructed to work more appropriately and efficiently, and reflects the care and ingenuity of the maker. The formula amounts to fewer resources and more information – defining information to be skill, durability, design, care, craftsmanship, and utility.

I often make lists in my mind of businesses which relate to one economy or the other. It is hard because most are not national businesses and are only known locally. But compare the magazines **In Business** (informative) and **Venture** (mass), the clothing of L.L. Bean and K-Mart, or the tools of Woodcraft Supply and Ace Hardware. It should be mentioned that Herman Kahn has already beat me to noticing this economy, recognized at least the soft edges of it many years ago, and thought it to be essentially a tertiary economy since it still relies heavily on the mass economy for raw materials and manufactured parts and tools. That's true – now. But I do not think that the mass economy will be the body for long, but rather the tail.

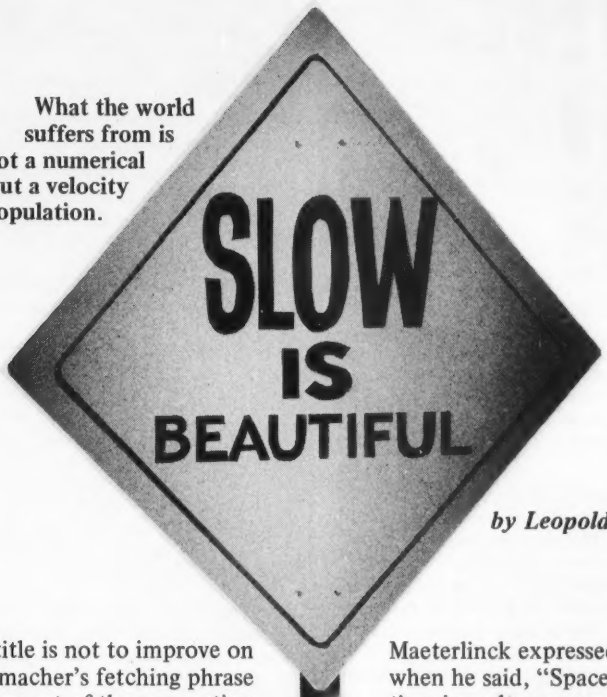
The mass economy requires people to make choices which always lead to fewer choices, reinforcing the power of the mass economy as a dominant social force. What the informative economy does is create choices which lead to more and more choices. Mass has inertia but lacks intelligence. It will be the intelligence of the informative economy that will eventually lead it away from being a subordinate tertiary economy. It is the ultimate deployment of goods that decides what and how much the primary and secondary economies produce. The tertiary economy has always been the head, and within the informative economy it is starting to think. That portends vast changes for the present economic structures, particularly since the larger enterprises are highly dependent on an increasingly shaky world economy. The primary economy will always be "bigger" than the tertiary economy, but like the body, that does not mean it will run the show.

Kahn has also described this sector of the economy as neo-epicurean and therefore ultimately elitist, with not too much relevance for the masses. I think we are seeing something quite different, what Yankelovich called the Europeanization of America. For example in the area of food, people are going to spend more money as a percentage of their income on food, not because they are gourmets but because they are beginning to appreciate what the French and Chinese cultures have known for years – that a good meal is life itself. Until the Americanization of Europe took place, the average French peasant ate better than 99% of the people in the United States. Hardly elitist. Cultural. For different reasons, people will begin to buy objects that promise to last and endure. Again, not elitist. The reason we are moving toward an informative economy is because it works better. It is only when the expansionist bubble of the mass economy is pricked, either by resource shortages, massive inflation or by a credit collapse, do we begin to see what is and isn't working. As long as the mass economy worked, there were few who would question it. As its flaws are more evident, there is a distinct move toward the informative economy.

What makes this transition difficult, at least economically, is that many businesses, enterprises and activities that are struggling to start up and survive right now are often judged and seen through the criteria of the mass economy. As we saw earlier, when inflation is romping freely along, there are few if any investments that are "economical." What is cost effective if money can no longer be depended on as an accurate mediator in the relationship of goods and services to mass? Many of the moves toward sustainable sources of energy, agriculture, and resource management are dismissed because they are not economical. Precisely. But it must be understood that they are uneconomical within the mass economy, and that the mass economy itself is now uneconomical. It can only create inflation, confusion, polarization of the rich and poor, and further inequities in resource allocation. "Economy" is derived from the Greek word for someone who manages a house household, i.e., a steward. The word grew to mean "careful management of resources, as to make them go as far as possible . . . (implying) frugality, thrift, saving." This means that the informative economy is the only true economy around, and what is economical now is to participate and create goods and services which adhere to the true meaning of economy. ■

5. An "influent" is also defined as an organism that interacts within the ecosystem without dominating it. The influent economy likewise interacts with its social and eco-systems interactively while the affluent economy has tended to dominate both societies and the environment.

What the world suffers from is not a numerical but a velocity overpopulation.



by Leopold Kohr

My title is not to improve on Dr. Schumacher's fetching phrase but to stress an aspect of the connection between the theory of size and the energy crisis which reveals the problem not only in its spatial but also in its time dimension, which every problem of space implies. For size is to time what speed is to space, which is nearly but not quite the same as what Maurice Maeterlinck expressed so beautifully when he said, "Space is frozen time, time is molten space."

I have tried to formulate the connection between the two in what I have called the *Velocity Theory of Population*, according to which aggregates, be they of atoms or humans, increase in mass not only through an addition to their numbers but also through an increase in the speed with which their components move. It is similar to the *Quantity Theory of Money*, according to which inflation can result not only if more money is put into circulation but also if the same amount is starting to circulate at too great a speed, such as happens when people lose faith in their government. Americans may love loveable Jimmy Carter. But their trust in his leadership is reflected more by the inflationary speed with which they try to get rid of the money he has proved unable to control than by his standing in the Gallup Poll. It matters little whether more dollars are

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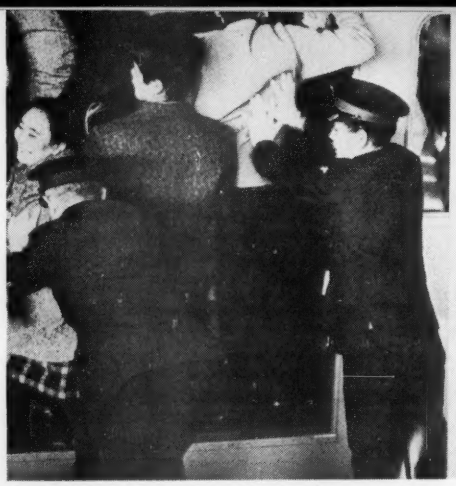
Leopold Kohr, a citizen of Salzburg, Austria (pop. 108,000), has been saying that Small Is Beautiful longer than E.F. Schumacher and with greater humor and equal pith. Kohr's books, ***The Breakdown of Nations, The City of Man, Development Without Aid,*** *and* ***The Overdeveloped Nations*** *prescribe elegant, convivial cures for the pathologies and diseconomies of scale.*

This article is part of a paper which Kohr prepared for "Technology: Over the Invisible Line?", a conference planned by Jerry Mander, Stephanie Mills, and Lee Swenson and sponsored by the Foundation for National Progress. It was held this March at Mills College in Oakland, California. –SB

CITY SIGNS AND LIGHTS/BOSTON 1973

"The faster the car, the better must be the roads"



THE EXPLODING CITY, N.Y.T.

Commuters and pushers in Tokyo subway

printed or not. What did matter a few months ago was the trust-inspiring victory of America's Ice Hockey Team over the Soviet Union's which temporarily so permeated the national soul that one of its instant effects was a rise of the dollar on foreign exchanges.

A more concrete example of the size-increasing effect of velocity is represented by the emergency exits in theatres. As the term implies, these are not needed under normal conditions, when an audience leaves at normal pace. They are needed only in case of panic when, as a result of gunshots or fire, an audience tries to leave at an accelerated pace. A faster pace has the same effect as an increase in numbers, turning a numerical audience of let us say 1,000 effectively into an audience of 2,000 or 3,000. This is why theatres must adjust their exits not to the numerical but the effective size of the groups they entertain – that is numerical size multiplied by speed. Hence the mass-reducing exhortation, "In case of fire walk, do not run."

What applies to theatres applies also to cities and states. Motorized progress along with advances in communication facilities has made it possible for cities to expand beyond the original confining walls and boundaries, enlarging first their territories and, in their wake, the effective if not the numerical size of their populations. The faster the car, the better must be the roads, and the further can the citizens live from the centre of their activities. But the further they live, the geometrically greater become the distances they must travel considering that they are now further away not only from their working places but from their friends, the theatres, the markets, the schools, their amusement areas, so that a move away from the city by 1 mile does not add 2 miles for the journey to and fro but perhaps 20 miles in daily travel. Hence the geometric increase in fuel consumption with every arithmetic expansion of a city.

When I moved 10 miles away from my office at the University of Puerto Rico, my car travels increased from zero to 60 miles, which, moreover, could be economically negotiated only at a higher than otherwise necessary speed, leading to a further increase in fuel consumption on this ground too. And since added speed has a mass-increasing effect, every outward expansion in a normally sized population develops all the costly symptoms of overpopulation with all this entails in traffic jams, accidents, and crime, as well as prohibitive road-building, coordination, administration, and policing costs. Indeed, what the world has come to suffer from is not a numerical but a velocity overpopulation. Anyone flying across its surface can see that numerically the world is still half empty.

The question is: how can one reduce the oil consuming speeds which our integrated large-scale way of life has made necessary? By exhorting us to drive slowly? This would lead to economic ruin if one realizes that, as I have read the other day, in an insignificant provincial town such as Linz, the capital of Upper Austria, fully 70% of the population depends on motorized means of transport. Imagine what this means in terms of OPEC's imperialist grip around the neck of valiant Jimmy Carter who thinks he is the head of a free society. No, the only way that can induce us to reduce our speed of movement and, along with it, make intermediate technology both adequate and appropriate is by a return to a spatially more contracted, leisurely, and largely pedestrian mode of life that makes high speeds not only unnecessary but uneconomical, as a Concorde would be for crossing the Bay of San Francisco. Moreover, it would enable us to divert our resources from the sterile integration of unnecessarily large social environments to the beautification of our concentrated urban neighbourhoods which, as the cities of antiquity and the Renaissance have shown, can be achieved by simply using the one source of energy which exists in inexhaustible abundance but has been made uneconomical by our global involvements – the nonpolluting muscle power of animal and man. In other words, slow is beautiful in an appropriately contracted social environment of beehive density and animation not only from a political and economic but, in the most literal sense, also from an aesthetic point of view, releasing an abundance of energy not by patriotically making us drive slowly, but by depriving us materially of the need for driving fast.

↑ **London Street, Norwich, England, before and after 1967 — when cars were banned.**

← **Morning in Paris, 1925, photograph by Herbert Bayer**

This does not mean that a return to smaller environments entails the destruction of existing cities and states. All it requires is a change in their structure. In the case of urban sprawls, it means the superimposition of a federal pattern by urbanizing the suburbs – that is by concentrating the bulk of a citizen's activities in their immediate neighbourhoods. Live where you work, and work where you live. This makes motorized transport largely superfluous. When I lived in Paris as a student some 50 years ago, I went to see glamour spots such as the Grands Boulevards, the Champs Elysees or Montmartre perhaps twice a year – for sightseeing. The reason for this was that there was hardly anything in the rest of the vast metropolis which could not be found in rival splendour in the *Quartier Latin* where I had my room and which, like all other *arrondissements* of Paris, was not a suburb but a highly autonomous and self-sufficient little city in its own right with all the glamour, centres, offices, theatres, schools, needed for keeping its citizens content within the confines of their animated unharassed pedestrian neighbourhoods. This reduced dependence on motorized means of transport to 10% of what it is today when parking places have become so scarce that, if by some outrageous luck you find one, it is ominously considered a signal of conjugal infidelity on the part of your spouse.

If urbanizing the suburbs represents a giant step towards the solution of the energy crisis at the level of cities, cantonizing the state is the answer at the national level. If the one means the superimposition of a federal structure on an urban area, the other entails the imposition of a confederal pattern on national complexes of great size, thereby replacing the costly transport ridden centralized interdependence (of which Henry Charles Lurey said, "It is the heaviest tax on land and labour") by a dike-like system of small regions of high political autonomy and economic self-sufficiency.

Summing up the conclusions of the size interpretation of history and velocity theory of population in their bearing on the energy crisis, let me stress once again: the answer lies not in the search for new sources of fuel for driving our current means of production, but in searching for means of production and a correspondingly decelerated way of life which, without lowering our living standards, which require less mechanical energy. In Schumacher's terms, this means not a more advanced but an intermediate form of technology. But since intermediate technology is adequate, efficient, and appropriate only in societies of limited size, it follows that it cannot work unless we are willing to replace first the present system of large powers, common markets, united nations, and what have you by the mobile balance of a system of small states as envisioned by St. Augustine, who said to the ancient Romans, "What glory is there in the largeness of empire, bright and brittle like glass, and forever in fear of breaking." ■

DOGMA & ICONOCLASM IN BIOLOGY: THE GENE IS NOT ENOUGH

by Carl Lindegren and Lynn Margulis

"I have hitherto sometimes spoken as if the variations – so common and multiform with organic beings under domestication and in a lesser degree with those under nature were due to chance. This, of course, is a wholly incorrect expression, but it serves to acknowledge plainly our ignorance of the cause of each particular variation."

Charles Darwin, 1872
THE ORIGIN OF SPECIES

The two most perplexing problems to those of us who contemplate the genetic basis of heredity are:

Q. 1. What causes innovation in evolution?
Q. 2. Why are some inherited traits only passed on to offspring by one parent, whereas the majority of measurable traits are transmitted equally by both the male and female parent?

The possible answers to these problems have been the concern of one of us (C.L.) for over fifty years and for the other (L.M.) for perhaps twenty. In the course of these accumulative seventy years we have both noticed that for many professional biologists even the raising of the questions is frowned upon as if it were blasphemy – and for others certain standard answers are proffered with such assurance and haughty disdain that we both – entirely independently – have often been made to feel that something is wrong with us for asking. Mutations in genes, we are told, provide the basis of inherited variations. Natural selection acts on the favorable mutations which occur by chance and rarely. Of course. These replies stem from the solidly embedded concepts of gene-mutation theory.

We have long memories. One of us (C.L.) discovered the other (L.M.) when his friends suggested that she might be tolerant of his new book manuscript. In it he raised the two questions listed above, among others. He then attempted to answer them in rather unique and unconventional ways. In so doing he also recorded a variety of idiosyncratic responses and concerns related to how evolution works that he remembered hearing biologists voice. He questioned gene-mutation theory. He remembered dialogues, some of which dated from the dawn of genetics as a science, from nearly the beginning of the century itself. His lively manuscript provided anecdotes about some of the great minds as well as insight into the personal relationships of the founding fathers of gene-mutation theory – the science of heredity.

Gene-mutation theory states that the information for the development of each organism is coded in the linear nucleotide base pair sequence of its DNA. DNA is the complex large molecule of which the chromosomes of the nucleus of the cell are in part comprised. The source of genetic variation is the inheritance from each of one's parents of base DNA pair sequences. In the pre-DNA days (before about 1953) gene-mutation theory was phrased differently. It stated that the control of the traits of an organism resides in the nucleus of the cell and is due to linearly aligned genes which are on chromosomes inside that nucleus. Each organism receives one half of its chromosomes from each of its parents. Inherited changes, or mutations in the chromosomes, usually too small to observe even with a microscope, provide the basis for innovation in evolution. In its heyday (1900 - 1935) the "chromosomal

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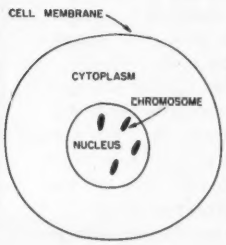
If oldtimer Lindegren has the nucleus of this argument, microbiologist Lynn Margulis provides the cytoplasm, containing it with an introduction and afterword. Both authors are credentialed scientists and credentialed iconoclasts. Margulis is familiar to **CoEvolution** *readers for her work on the Gaia Hypothesis and the symbiotic theory of cell evolution.* *–SB*

Carl Lindegren, author of *Cold War in Biology*, with an electron microscope. ***"The Morgan school inferred that since the color of the eye is controlled by genes, the formation of the eye itself is also controlled by genes. But this is an extremely dangerous extrapolation."***



The major structure of an animal cell. Lindegren and Margulis suggest that hereditary factors may be found in the cytoplasm as well as in the chromosomes.

Diagram from Cold War in Biology, Carl C. Lindegren (1966)

theory of heredity" was developed by painstaking work correlating the transmission of traits to subsequent generations and the behavior of chromosomes in sperm, egg and body cells. This chromosome theory, also called "Mendelism-Morganism-Mullerism," owes a great deal to Thomas Hunt Morgan, author of a very influential book called **Theory of the Gene** (1928, Columbia University Press).

In the post-DNA period the statement of explanation of evolutionary innovation was modified to read: mutations or randomly caused alterations in the nucleotide base sequence of the DNA molecule provide the basis for inherited change and thereby for the origin of new variation in evolution.

Both before and after Watson and Crick elucidated the structure of DNA, it was acknowledged that offspring receive one-half their genes from each parent, except for certain sex-linked genes which was also understood on the basis of the behavior of the X and Y sex chromosomes. Whether the mother carried a gene for a trait or whether the father carried that gene made no difference in the frequency of appearance of the trait amongst the offspring. For example, if a mother had type A blood and came from a family with exclusively that type for generations as far back as anyone knew and the father had type B blood on all sides of his family, the children of these parents would predictably all have type AB blood. It would be exactly the same outcome if it had been the mother who had type B and the father who had had type A. This rule, that of reciprocity of crosses, follows from the fact that the mother has 46 chromosomes, 23 pairs, and she gives 23 chromosomes to each of her children, one of which carries the gene for type A blood. The father also has his 23 pairs of chromosomes. He donates in each sperm 23 chromosomes to each of his offspring, including the one chromosome carrying the gene for type B blood. Receiving the chromosome bearing the gene for blood type A on one chromosome and for blood type B on the other of its new pair the child, as predicted, will have type AB blood. Therefore in gene mutation theory the answer to question 2 above is that no traits are passed on to offspring by only one parent.

Thus, any of our colleagues not too choked up by contempt to respond when we raised questions 1 and 2 would say:

A.1. Innovation in evolution is caused by the inheritance of new mutations.

A.2. All nuclear genes on chromosomes lead to biparental inheritance of traits. Thus if you have found traits that are inherited from only one parent to all of the offspring you are onto something perhaps not believable and certainly something rather strange, an observation against the rules. In short, there are two sorts of genes: nuclear and unclear.* The nuclear ones are worth studying. The unclear ones, by implication, you had better leave alone.

More or less such are the answers each of the authors of this article received during their seventy years of posing the questions. The answers still do not wash. We have never discussed these issues with each other. We discovered in print and by mail that the pat answers satisfied neither of us. We both think nuclear genes are wonderful but that they are not enough.

In the spring of 1979 C.L. sent his unpublished –

*We are paraphrasing here a statement published in a short fine book, **Nucleo-cytoplasmic relations in microorganisms** (Oxford, 1953) by a well-known geneticist, Boris Ephrussi.

and apparently unpublishable – book manuscript to L.M. On the basis of phone calls and letters we decided to try again to bring the two questions to more popular attention. From experience we knew that the professional journals would reject any joint work that directly raised the questions. The standard reviewers would scorn what they would brand "philosophy" or "speculation" – and would demand as a condition of acceptance of any manuscript that all references to personalities of scientists – dead or alive – be purged. Furthermore, even worse, the probability of obtaining direct grant support to continue work to answer these unpopular questions, we know also from experience, is virtually nil. Thus we had two options: to continue to keep silent or try to present the story in a readable way to a less dogmatic audience. We decided on the latter, obviously, and we welcome any further comments.

We present below excerpts from the ill-fated book manuscript of C. L. They show that these same two bothersome questions, difficult to raise today in polite biological society, have been ignored for a long time. In most cases, in fact, it has been the giants of genetics whose opinions and censorships have determined the course of our protracted restrain-and-desist orders. Thus we thought C.L.'s memories of the early days might be of some general interest. To fully present what are, in our opinions, the true and complete answers to questions 1 and 2 above would require tomes and time, if indeed it could be done at all. Nevertheless, after listening to some of C.L.'s stories of the early banter on them, we briefly summarize possible answers – our opinions of what causes major innovations in evolution and why some traits are inherited from only one parent. The issues indeed turn out to be related to each other.

C.L., at age 83 retired and living in Florida, in 1979 sent this manuscript to L.M. Beginning with page 1 it more or less reads:

THE ORIGIN, STRUCTURE, PHYSIOLOGY AND HEREDITY OF THE LIVING CELL

The Theory of the Gene (1928 - 1978)

I remember very clearly the first inkling I had that something might be wrong with the gene mutation theory. It was in about 1930. In 1928 Dr. Thomas Hunt Morgan had moved from New York to California, where I joined his group as a graduate student. That year Dr. Morgan had invited Karl Belar, an exceptionally accomplished student of chromosome behavior who died in 1931, to spend some time with us in Pasadena at Cal Tech. Belar never went to the evening seminars at Cal Tech. One morning I came into Belar's laboratory to get some help in my cytological work and, during the conversation, I told him about the seminar of the preceding night on the work of Karl Correns, who was a rediscoverer of Mendel's laws of inheritance. Correns was the head of a research division at the Kaiser Wilhelm Institute at Berlin Dahlem where Belar worked. Correns had showed how, in some cases of inheritance of leaf color pattern in plants, only the female parent passed on the traits to the offspring – the first example of non-nuclear (or unclear) inheritance in the literature. I told Belar that none of the audience in the seminar group seemed to think Correns' work was convincing. Dr. Morgan, for example, had objected to an insufficiency of controls. Belar answered in only one sentence: "Naturally they don't believe it, it is contrary to dogma."

That remark has gnawed at my mind for 50 years. By 1920, Morgan and his colleagues had agreed that the genes on the chromosomes determined heredity and evolution. He and his fellow members of the famous "fly-room" group at Columbia University had been able to correlate the inheritance pattern of visible traits in the fruit fly, *Drosophila melanogaster*, with the pattern of transmission of the chromosomes through the egg and sperm to the offspring generation. But others in the field, especially at Columbia, did not find the theory acceptable. I have discussed their arguments against the gene theory in my book **The Cold War in Biology** (Planaria Press, Ann Arbor, Michigan, 1966).

Dr. Morgan never claimed the theory of the gene was a final solution to the problem of heredity; in his book, **The Theory of the Gene**, he said only that the problem may be simpler than had been suspected. Reaction to the theory varied from the unbridled enthusiasm of his followers and his students to total rejection, for example, by Robert A. Harper, who was head of the Botany Department and who worked in the same building at Columbia University.

Professor E.B. Wilson, head of Columbia's Department of Zoology was Dr. Morgan's superior. His book, **The Cell in Development and Heredity** (Macmillan, 1925), was a classic; it helped to firmly establish the concept of chromosomal theory of heredity. Wilson, although he had brought together detailed evidence from many types of observations – zoological, botanical and cytological – to support gene theory, still suggested that the non-chromosomal portion of the cell also

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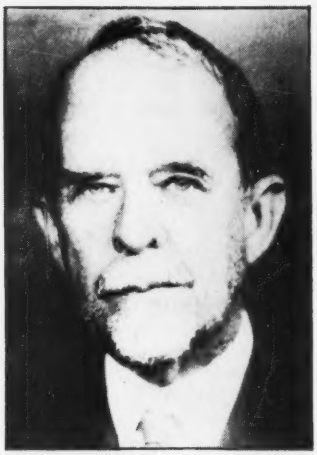
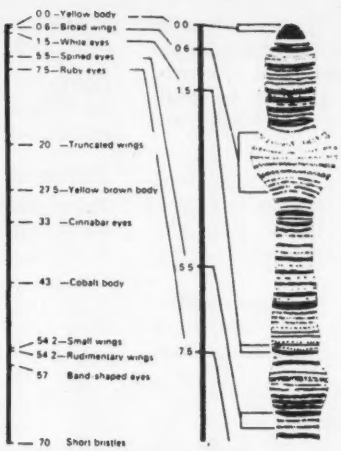




Genetic research on fruit flies yielded detailed gene maps of 700 inherited traits. Lindegren argues that the traits are trivial, or terminal – they affect the color of the eye but not the presence or organization of the eye itself.

Thomas Hunt Morgan, who developed fruit flies as the pre-eminent genetic lab animal and wrote a pivotal work, *Theory of the Gene* (1928). Lindegren was always guided by his advice, ***"Never go beyond the facts,"*** until C.D. Darlington remarked, ***"If you don't go beyond the facts you can never understand the facts."***

From Grzimek's Encyclopedia of Evolution (1972).

might contain genetic factors that determined some traits.

Dr. Morgan avoided the subject of non-nuclear inheritance – he simply was very critical of reckless speculation and rejected what he called "*ex cathedra* pronouncements." However, he was generally more cautious, thoughtful and receptive to criticism than his staff and other gene theory converts were. In **The Theory of the Gene**, Morgan's proposition is presented simply; the book is filled with numerous, specific, well-illustrated examples. The gene theory was soon taken up by thousands of workers who used the mutant fruit flies produced by Dr. Morgan's staff to duplicate the experiments and expand the work to a worldwide scale. This recognition led to the Nobel Prize which he received in 1933.

Morgan was however, to a greater extent than his students, inclined to uncertainty about the role of the gene in evolution. Disciples are usually more positive than their leader. Dr. Morgan always cautioned, "Never go beyond the facts." But, of course, everyone did. Some of Morgan's colleagues (like H.J. Muller who discovered the effects of x-rays in causing mutation) equated the gene with life. Dr. Morgan, however, never used an expression that suggested such a thing. I heard him say in seminar – almost as if he were talking to himself – "The genes we study in the laboratory must be different from those that act in evolution."

The concept of the gene as a major factor in evolution was fully supported by many other geneticists, but Goldschmidt, then at the University of California at Berkeley, a great geneticist and an extremely scholarly man with a disciplined mind, did not find it so simple. Richard Goldschmidt was, in my opinion, the most thoughtful of all the early leaders in genetics. He had the misfortune to spend his last years in the U.S. after a lifetime as a highly-honored German professor. A refugee from Hitler's madness, he had been the head of a great research establishment, the Kaiser Wilhelm Institute. He was miserable in California because he never had the respect he needed. He told me once, at his home at Berkeley, that the people at Cal Tech thought he was a silly old man. He seemed to me to be very sad. He wrote a fascinating book, **Theoretical Genetics**, which was published in 1955. In his writings, Goldschmidt said that gene mutations were not capable or producing evolutionary changes. He proposed that evolutionary changes depended on *macromutations*, a word he coined.

In **Theoretical Genetics** Goldschmidt gave a final evaluation of the role of the gene in evolution:

> "Perhaps some day an objective appraisal of all this [macromutation] will be made, together with a critical consideration of the failure of Neo-Darwinism to explain evolution beyond the level of mixed interbreeding populations . . . It must be taken for granted that something really new in evolution cannot be produced by the permutations of small mutants with which population genetics deals so successfully. This may mean that evolution requires

such profound changes of the genic material as the origination of new genes, if we stay within the classical theory, and (or) a type of mutant change which is different from the small variants of genic effects with which Neo-Darwinian theory deals."

Both Morgan and Goldschmidt were saddled with the same handicap: they both believed that no matter what controlled evolution, the genes must be involved; they could conceive of no alternative.

Even Goldschmidt was sufficiently indoctrinated in gene theory to believe that evolutionary innovation was due to some great change in the entire chromosome complex of an organism. He made the point that any large taxonomical division of animals was always distinguished by a unique chromosomal pattern. He was one of the few men with a sufficiently wide experience to know this fact.

I remember most vividly a direct confrontation between Theodosius Dobzhansky and Dr. Goldschmidt in Stockholm. Dobzhansky was with me at Cal Tech, a staff member when I was a graduate student. He received his invitation to come to Cal Tech on the basis of his work that showed that mutations causing white eyes in *Drosophila* affected almost every other organ in the body. He had been trained in Russia, where he had received an advanced degree. When it came time for him to return to Russia, he defected and went to Mexico. Morgan later gave him a permanent appointment. Dobzhansky made many contributions to population and ecological genetics, he was at Columbia for many years, a part of that scene. Prior to coming to Cal Tech he had studied with A.H. Sturtevant, another immigrant to the West Coast from the Columbia University fly room. Goldschmidt that night had just delivered a lecture on his Macromutation Theory. Dobzhansky got up near me, his voice quivering with anger and hatred. He said, "Zee zikneefeekenz of macromutation in evolution izz tzero." He gave no arguments, no analysis – only a purely gratuitous insult. Morgan would have been mortified and ashamed, but I'm sorry to say, Sturtevant would have been pleased. I thought Dobzhansky could be really obnoxious on occasion.

In the early '30s Cyril Darlington, the cytologist who was then about 30 years old, wrote a speculative book about breakage and reunion of chromosomes, that is, about crossing-over. It was widely read. To most people he seemed to be the most interesting and clear thinking writer in this field. Dr. Morgan invited him to spend a year at Cal Tech, where he ran up against a number of people whose ideas were opposed to his. I told Cyril that Morgan had often admonished us to "never go beyond the facts." Darlington answered, "If you don't go beyond the facts, you can never understand the facts."

Darlington's epigram for me goes to the core of the difference between speculative and conservative science.

The Gene as the Only Factor in Heredity

The evidence that genes control traits depended on the Morgan school. Morgan and his colleagues in the flyroom established beyond doubt that genes arranged on the chromosome determine whether or not an inherited trait is of one type or another. For example, if a specific gene on the chromosome undergoes a certain mutation, and all others remain relatively unchanged, flies with the new mutated gene may have white eyes, while flies in which the gene is unchanged will retain normal red eyes. This is undeniable; the same holds for at least 700 other inherited traits of the fruitfly. But all these traits may be called "terminal." The color of an animal's eye cannot be studied unless the eye is present; nor can the morphology of a wing be determined if the wings are absent. This was what E.B. Wilson meant when he said that the genes controlled trivial characteristics. The Morgan school defended its work but perhaps pled its cases too diligently. They argued that since all those traits that can be used effectively for the study of heredity have been shown to be controlled by genes on chromosomes, all traits in animals and plants are controlled by genes on chromosomes. They concluded that the problem of heredity is solved. They inferred that since the color of the eye is controlled by genes, the formation of the eye itself is also controlled by genes. But this is an extremely dangerous extrapolation.

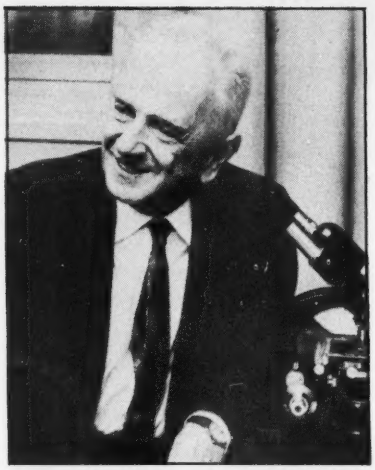
Gene Control of Body Structure

If the genes controlled the organization of, for example, the vertebrate body – with the head at one end, the tail at the other, and the spine connecting; the eyes placed in the head, with the ears nearby; the skin on the outside, heart and lungs in the thorax; the intestines in the abdomen and so forth – one might expect frequent rearrangements. But rearrangements of body parts seldom, if ever, occur. Is there a reason to expect such regularity if randomly-mutating, randomly-arranged genes control the body's organization? The relationship between genes on chromosomes and the physiology and morphology of the mature organism is not so simple.

The Gene as a Living Molecule

Watson and Crick discovered the structure of the chemical compound DNA leading to an exquisite insight into replication, the way in which DNA could produce two new molecules identical to the original. Just the double-helical structure of DNA itself suggested immediately how the gene might

From Evolution (Freeman, 1977).



Theodosius Dobzhansky, Russian born and trained, author of *Genetics and the Origin of Species* (1937) and other influential works, commented upon Richard Goldschmidt's concept of macromutation: ***"Zee zikneefeekenz of macromutation in evolution izz tzero."***

Ross Madden (Black Star).

A.H. Sturtevant (in 1949), who carried on invaluable work with fruit flies after T.H. Morgan lost interest. In *Cold War in Biology* Lindegren notes that many of the top geneticists – Dobzhansky, Rhoades, Beadle, and Ephrussi – studied with him, and that Sturtevant made unusually clear and moral points to the Atomic Energy Commission in early hearings about atomic bomb testing.

be self-replicating. The inference made by many, however, was that DNA is the only self-replicating entity, hence, the only "living" unit in the cell. Biochemists, with little experience in biology, moved into the front ranks of biological research.

With time, gene theory has changed from a debatable hypothesis to a dogma asserted positively and arrogantly by its adherents. Some contemporary biochemists have dispensed with caution and assert that DNA is life. It is their view that since they have discovered the basic principle, there is no point in quibbling over a few minor details. In this manuscript I want to "reopen the books," so to speak. Is the gene-made-of-DNA with which they have fallen so madly in love a respectable maiden with the necessary credentials for sainthood?

I remember a train ride from Leningrad to Moscow in 1961, thirty years after I had received my degree at Cal Tech, with a biochemist who was then a young man at Cal Tech (and I think is still there). He had made a critical discovery about DNA. I, as an older, experienced man, explained how biology works to the young biochemist, all of whose work had been done in test tubes on extracts from nuclei. "In biology," I said, "you need to know many details; these must be buried so deep in your memory that you can never forget them, although you may seldom be conscious of them. You work with this background coloring your judgments and conclusions." In short, I made an argument for experience and intuition.

He said, "That's ridiculous. All biology has now been reduced to the chemistry of DNA." ("Reducing" understanding of the cosmos to physics and chemistry is the basis for the widely held philosophy of "Reductionism.")

Is it true then replication of DNA is life, that it explains life? Can life be reduced to physics and chemistry now? I think not. Let me analyze the reduction of biology to the chemistry of DNA in this dialogue:

Q. So, if life is the chemistry of DNA, how does DNA work? For example, does DNA make the red pigment, the apricot-colored pigment, or no pigment in the white eye of *Drosophila*?

A. No, DNA makes a pattern molecule. If the pattern is "X" the pigment is red; if "Y", the pigment is something else, etc.

Q. What does the pattern make?

A. The pattern that the gene makes goes out into the cytoplasm and acts as a pattern to make protein.

Q. Is the protein the pigment?

A. No. The protein is an enzyme.

Q. What does the enzyme do?

A. The enzyme controls a chemical reaction that produces a substance that ends up as part of the pigment or as the pigment itself.

Q. Does the pigment have anything to do with making the eye?

A. Of course, it makes the pigment that colors the eye.

Q. Just like paint on a building?

A. Of course.

Q. But what about the eye, itself?

A. Well, other genes do that job, of course.

Q. How do you know?

A. It is a logical conclusion.

But is the conclusion logical? Has the question of what makes the eye been answered? No. The conclusion that genes make or direct the making of eyes is without direct evidence. The eye is not a trivial character, although the color of the eye may well be called trivial or in any case terminal.

The role of genes in eye coloring is comparable to the role of an architect's assistant who neither paints the building nor makes the paint, but merely chooses the paint. If he were absent, the building would still be there, but unpainted. One cannot pretend that because he ordered the paint it was logical to conclude that he had built the building.

Nearly everything in the cell is made outside of the nucleus in the cytoplasm. The genes in the nucleus determine the terminal traits, but the actual construction of cell parts occurs in the cytoplasm. When the gene fails to send out an order for the terminal trait, the cytoplasm builds the structure but without the modification. In most cases the structure is functional. But the role of the cytoplasm in determining structure – partly because it is difficult to study – has been largely ignored. Some geneticists have assumed it to be effectively inert, comparable to the environment or fluid milieu in which organisms generally live.

Any concept of the living state is bound to be highly subjective because no two persons can have identical experiences in examining this complex subject. I find the concept of the "living" DNA molecule inconsistent with my concept of the living state. The following anecdote illustrates the extreme difference of opinion that can be found at the highest levels. At Cal Tech in the early '30s, Dobzhansky gave a course in genetics; I was his laboratory assistant. Folke Skoog, a graduate student of Frits Went, took our genetics course. Went was a Dutchman trained in Holland and the son of a Novel Prize-winning botanist. Folke told me once that when he told Frits that in the course Dobzhansky had said that the genes were the only living units in the cell, Frits had exploded and said, "Of course not, everything in the cell is living." I treasure this remark for although the idea had been held for a long time by many Europeans, this was the first time that the concept that the entire cell was alive had been presented to me.

Frits Went (in 1950), who responded to Dobzhansky's thesis that genes are the only living units in the cell: ***Of course not, everything in the cell is living."***

The gene is not the first thing that has been equated with the essence of life. In the early decades of this century, when I was studying plant physiology, there was a school of thought that pinpointed the plasma membrane as the living substance of the cell. Among biochemists, at least these days, the gene has superceded the membrane. Such philosophical tenets, largely unstated, are the basis for much of the contentiousness in science, much of the malaise. But open discussion of deep philosophical issues, unexpressed assumptions, and personal prejudices is simply banned from any forum.

Perhaps, although he said very little about it, such problems preoccupied Dr. Morgan too. After coming to Cal Tech in 1928 he did no more work on fruit flies. He kept looking for new material, for a new approach. He studied homing pigeons, presumably to find something out about the genetic basis of instincts. He bred Mariposa lilies. On Saturdays with Albert Tyler at the Corona del Mar marine laboratory of Cal Tech he did embryological experiments, using the eggs of the giant worm, *Urechis*.

Dr. Morgan may have felt that fruit-fly genetics was a blind alley. Actually no new concepts came out of the fruit fly work after Morgan moved to Cal Tech. A great many loose ends were picked up and put together, but nothing developed that was not already implicit from the earlier work performed mainly in New York.

Just as the chromosome theory of heredity reached its peak in development before Morgan left for Cal Tech, it seems to me that the DNA gene theory dogma has now reached a dead end. The physicists and biochemists who entered biology have been well trained but are unable to develop new ideas. They are trapped in their specific slots, and they simply keep on doing the same thing with minor variations. The broad concepts of what DNA does in controlling the production of RNA and enzymes and their products have been laid down. To detail many more specific cases involves really structural chemistry of macromolecules and requires a geometric increase in the investment of money, time and talent that, in my opinion, is not worth the effort.

Of course, I do not dismiss the gene as a factor in heredity. My intent is to show that it acts only in short-term, adaptive heredity and not in evolutionary change. The control of evolution lies in the cytoplasm and to study such changes, we must now turn to the cytoplasm.

The rest of C.L.'s book on the cell and its genetic system may eventually be forthcoming. The cytoplasm may be rescued and it too may join the DNA as an object of avowed love. In any case we both have ideas concerning the continuous snub given the cytoplasm by the champions of the nucleus. As with environment vs. heredity proponents – the match is intrinsically lost. Neither heredity champions nor environment enthusiasts will ever win an all-or-none battle. Organisms, of course, are products of both – and of complex interactions between their genetic potential and the possibilities afforded by their environment.

The analogy can be applied to nucleus champions and the cytoplasm enthusiasts: all cells have both. No genes reproduce without cytoplasm, no cytoplasm grows without genes.

Let us pose and then attempt to answer our two questions again. How does significant innovation in evolution occur? Certainly one aspect of the origin of genetic novelty involves the bringing together of various genetic systems, different sorts of cells, into new combinations to form new sorts of more complex cells – hereditary cell symbioses, if you will. Another aspect involves massive gene duplications and the subsequent differentiation of now gratuitous long stretches of DNA. Still another mechanism of evolutionary innovation involves large chromosomal changes such as Goldschmidt mentioned – although many of today's facts were not available to him. For example, we can now infer that occasionally in mammals and other vertebrates, premature replication of chromosomal spindle attachments (called kinetochores) occurs. This simultaneously affects many chromosomes such that single long ones form double half ones. This process, called karyotypic fissioning, has also failed to receive the attention it deserves. However, much evidence is now available – mainly assembled by geneticist Neil Todd – to show the importance of this phenomenon in the bursts of evolutionary diversity that, for example, characterize the mammalian fossil record.

Each of these evolutionary mechanisms – hereditary symbioses, duplication and differentiation, as well as karyotypic fissioning – has its scientific protagonists. Each, in its way, is "macromutation." Each hides stories of subtle persecution, ignoring of data, or suppression of ideas.

And why are some traits inherited from only one parent rather than by an equal contribution from both? Because occasionally the cytoplasmic symbionts or cell organelles, such as chloroplasts, that have their own genetic material (DNA) are carried by only one parent, usually the female or egg parent because she makes the larger cytoplasma contribution to the next generation. In such cases, like the first one observed by Karl Correns early in the century, all the offspring may receive only that genetic material associated with the symbionts or chloroplasts in the egg. Therefore they receive DNA only of their mother parent.

Much more of course could be said about new answers to Darwin's query quoted at the beginning of this article. Much evidence could be given in support of his guess that random mutations in nuclear DNA have not sufficed. We could provide detailed evidence that the gene by itself is not enough. But expository science hasn't been our major purpose here. Rather we have wanted to show, with genetics as our example, that personalities do count, even if editors of professional journals assiduously delete all written reference to them. Strong personalities with occasionally violent prejudices influence which scientific questions are funded, are pursued, and are legitimized and which (like our two) are postponed or ridiculed. We have voiced our wonder about the silent monsters: the personal idiosyncrasies, unconscious or unmentioned assumptions, the historical context, the bruised egos, the fierce ambitions, the damnation by faint praise, the old-

boy networks, the subtle digs, the scorn for the graduates of bush league institutions, the quiet humility of some correct scientists, and the arrogant errors of other persistent ones. All these hovering devils are dramatic determinants of the successes as well as the happiness or despair of scientists and science students as they march on their great and glorious quests for the supposed truth.

Consequence

The two ideas we are struggling with in this article are just being united in the minds of scientific investigators now. They are still not accepted by most textbooks of genetics, evolution or even general biology and even where they are they are presented *ad hoc* rather than in the fundamental way we would advocate.

We mean that all cells of animals and plants are the products of symbioses between bacteria and that the so-called cytoplasmic (outside the nucleus) heredity systems are just the remnants of the genetic systems of the original bacteria symbiants. Nucleated cells, therefore, are not individuals; they are intrinsically *communities* of individuals of different species integrated and living in harmony. Nuclear genes interact with cytoplasmic genes – the latter are just as important in the total function of these cells. Nuclear genes are not enough.

Neither are mutations in nuclear genes. That is, changes in the nucleotide base sequences of DNA of chromosomes are not enough to account for the dramatic innovation that has marked the evolution of life. Of course mutations, changes in individuals, have provided new raw material upon which natural selection has acted, but not enough. Shuffling genes is not adequate. Symbiotic partnerships have been crucial for the origin of many new organs and organisms. Luminous fish have light organs in which they culture constantly glowing bacteria; cows could not eat grass without their symbiotic rumen bacteria and ciliates. Would an animal on 4 legs unable to digest grass even be a cow? People also are a few per cent dry weight bacteria – most of them are intestinal, but bacteria also coat the skin, the teeth and gums, and other parts of the body.

Cytoplasmic heredity is a manifestation of ancient symbiosis. Evolution has proceeded via more and more complex symbiotic interactions that have led to rapid and incredible novelties. One can think of symbiosis as a sexual process in which the partners (instead of being extremely closely-related members of the same species) are only distantly related. The partners came together – such as leguminous plants and their symbiotic nitrogen-fixing bacteria – in a kind of "fertilization." They then often separate later in the life cycle as the plants make seeds, and the bacteria return to the soil. This is analogous to meiosis and the formation of sex cells – egg and sperm (seed and free-living bacteria). They come together again to form the functioning nitrogen-fixing mature plant. Since the partnerships in symbiosis involve members of very different species, of course it isn't truly sexuality – but rather has been called "parasexuality."

Sexuality – fusion of cells from two different parents to make new individuals – may have been even less important than symbiosis – fusion of individuals of different species – in the long course of evolution. No doubt both sexuality and parasexuality play important roles. In any case the gene itself is not enough to explain the origin of novelty and diversity.

The recognition of symbiotic genetic processes is just beginning now. For example a relevant meeting, "intracellular Symbiosis and the Origin of Eukaryotic Cell Organelles" was just held (Jan. 22 - 24) by the New York Academy of Sciences. That meeting could not have taken place a few years ago. The dogma has been that these two subjects – symbiosis and cell organelles (mitochondria, chloroplasts) have nothing to do with each other.

New ideas have a hard time in science. They tend to be suppressed by arrogance – condemnation by acknowledged leaders in the field. (A leader, often nearly by definition – is someone who controls a great deal of research money.) The insidious way in which new ideas – like these on symbiosis and cytoplasmic heredity – are suppressed is by lack of funding and strong rumor. We have both suffered severely from these causes. Of course if the new ideas are correct, they eventually will take hold. In the meantime the innovator usually conforms by doing normal science or, less frequently, becomes bitter and quits altogether. New ideas tend to be subject to rigorous criticism – criticism that commonly held ideas, even when absurd, are not subjected to. Thus innovators have to be tough and persistent or recluse or outwardly accommodating.

We have been – at one time or another – all of these. We of course have also been incorrect. But science proceeds in this way – large leaps and giant steps, then lots of small sure stances. The supposed flawless logic from the specific to the general, from the simple observation to the broad truth, is a mirage. Dogmatism restrains, iconoclasm liberates. Vanity, powermongering, avariciousness, pride, dedication, love, industry, sadism and most other attributes of people apply to science and to scientists as well. This anecdote of the gene problem is but one of a possible plethora of other examples. ■

The Plan of St. Gall

The production of this book renews one's faith in universities as places devoted to the love of learning. The typography and design, the binding and the paper, the craftsmanly use of photo-offset to take in visual quotations from a wide range of medieval materials: all are brought together in a work that expresses a care for the infinite and the infinitesimal. This must certainly be the most beautiful book produced anywhere in a generation or two. As a study of the architecture and economy of a Carolingian monastery, **The Plan of St. Gall** *is really a research into the meaning of monasticism as a form of cultural preservation and creation. Now that we are once again in a period of rekindling of interest in monasticism, from Tassajara to Dharmadhatu to Benedictine Grange, we are perhaps in a better historical climate to appreciate that this research into the past is really a search into the future. For readers of* **CQ** *who are taken with the works of Brothers John Todd and Sim Van der Ryn, these three volumes provide another dimension to the design of "solar villages," a dimension in which technology is made appropriate to cosmology in a vision of the sacred. As all of us continue our work on the architecture and economy of a new way of life, whether in California, Colorado, or Massachusetts,* **The Plan of St. Gall** *should be a book to hold in the evening with clean hands after a day of work with compost and stones, windmills and solar collectors.*
—William Irwin Thompson

As **The Times Atlas of World History** *did, these big books have been leaving dents in my chest as I read them far into the night like detective stories, which they resemble. Within the account of how to build a ninth century A.D. space colony is considerable fascinating sleuth work. I was particularly taken by Volume II, which gives perhaps the first account of the brilliant vernacular northern European building, the three-aisled structure that you see alive and adapting in nearly every barn and cathedral. It dates back in unbroken lineage to several millenia B.C. It's pretty smart: no load-bearing walls, no ridge pole, rafters neatly balanced on posts that conveniently divide or impressively leave open the vast interior space. I want to build one.* *—SB*

•

The Plan of St. Gall gathers as in a lens an image of the whole of Carolingian life. Product of the first synthetic encounter between Antiquity and new civilization of the Barbarian north, it testifies the first pervasive alliance between Church and State in this nascent world, and the first successful integration into the fabric of the State, as a force at once spiritual, educational, and economic, of the ideal of monasticism which in Antiquity had taken its start as a counter culture.

The men who conceived the Plan were of the intellectual elite of their time; they would have held striking presence among sagacious men of any age. They were expert in every facet of that microcosm of life compacted by history within the walls of a monsatic enclosure: its spiritual and devotional aspirations, its educational endeavors, its medical and sanitary services, its industrial and technological facilities. Administrative and economic managers, they were accomplished in agriculture, viticulture, animal husbandry. Associated with them were the greatest scholars, illuminators, and metal workers of the time.

The makers of the Plan possessed consummate skill in architectural planning. They designed in a plot only 480 by 640 feet a self-sustaining community for some 270 souls. Each structure is scaled to a specific use, all are sited in relation to one another and to the whole so as to insure proximity among related and distance between disparate functions — a settlement of urban complexity, clustered around the imposing bulk of a basilica that, had it ever been built as conceived, would have been the most outstanding church of the Age of Charlemegne.

The Plan of St Gall
(A Study of the Architecture & Economy of, & Life in a Paradigmatic Carolingian Monastery)
Walter Horn and Ernest Born
1979; Vol I — 356 pp.; Vol II — 358 pp.; Vol III — 266 pp.

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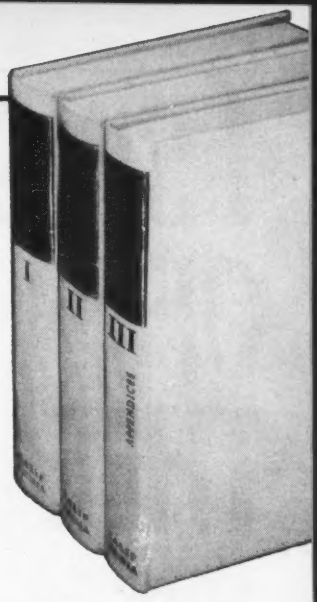
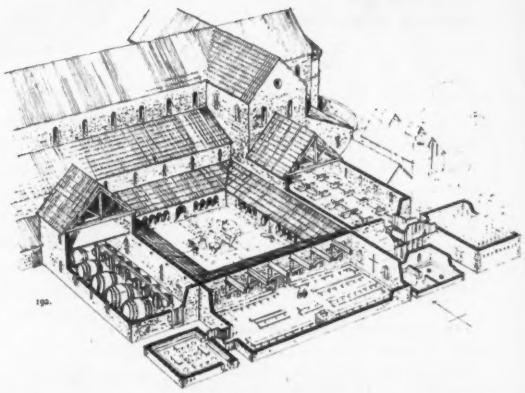
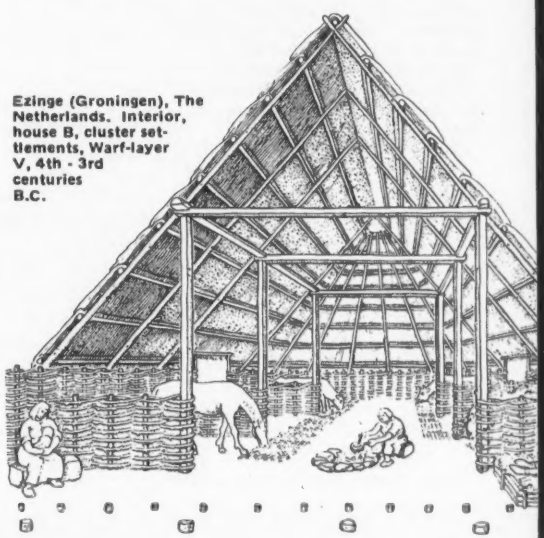




Monk's cloister, cellar, kitchen, refectory, laundry & bath house, dormitory, latrine. Monastery, St. Gall.



Ezinge (Groningen), The Netherlands. Interior, house B, cluster settlements, Warf-layer V, 4th - 3rd centuries B.C.

I SING OF THEE

by Will Baker

Illustrated by David Wills

It was English teacher Will Baker who wrote maybe the funniest piece we ever ran, "Left Over In Your Heart" in the summer '77 CQ. Recently he spent several months in South America. Now he's back in the heaving bosom of his heroine, Nora Amerique – shaken. He wrote us:

"I'm really pleased that you liked this. It is one of the weirdest things I have written, and I never thought it would connect easily. But the way things are going it seems like only screams of laughter or awful weirdness or surrealism or the like will serve anymore. The difference between here and where I was in the jungle is hard on my mind, but I am still writing about it and later will send you some more of it. Thanks for the gift subscription. Yrs. in voluntary survival,

Will Baker,
Davis, California.

When the Secretary left the council room he was frowning and his shoulders were raised a little, giving him a heron's hunch and stalk. Reporters were on him at once, like a gang of crows.

"The Saudis," he said after a quick flutter in his throat, "are making things difficult."

"Could you clarify, sir? Only the Saudis?"

"What about Iran, Mr. Secretary?"

"Will the Israelis accept your solution?"

"And France?"

The Secretary frowned more deeply, half dodging, half shouldering his way through the crowd. "No comment. The United States is adopting a posture of wait and see. France needs time to study the proposition. No comment."

Heavy-set men in sharply creased suits folded him neatly into a limousine. It glided away from the wobbling pencils and soft, bright pop of bulbs.

Later that day a few of the other countries were watching the scene on the pm news. Guatemala had parked his huaraches on an old banana crate, revealing the herringbone pattern of rubbertire soles. Peru tilted forward from an armchair, great pouches under her mascara, the eyes themselves bleary from the half-empty bottle of Pernod some German tourists had left her in exchange for certain favors. Somaliland squatted on the floor, still as a great boulder. Flies settled on the black sheen of her nose, at the corners of the unblinking yellow eyes, but she did not move. Her face was carved into a permanent expression of sullen indifference.

"Fuck the United States," said the Malay. "France too." He leaned in the doorway, barefoot, a rag around his waist and a curving, bone-handled knife in his hand. He was carving heron heads, upside down, on the doorjamb. There were grunts of agreement. The flicker from the

screen of the old cabinet-style television did not illuminate the corners of the room, but here and there feet – some shoeless and dirty, some clad in ragged slippers – protruded into the light. There was a thin haze of smoke in the air, and a complex of odors: fetid and sharp, human and wild, sweet and acrid. Occasionally from the shadows came a strong new smell, accompanied by a snuffling, a sigh, or some wet, obscene sound.

"Moza," Guatemala swung his feet down flat in the dust of the floor, "where you at?"

There was a squeal and a click like hoof on stone from one of the dark corners of the room.

"He fucking the pig," said Peru. She raised the bottle in a gesture of acknowledgment at the gust of laughter, and swigged from it.

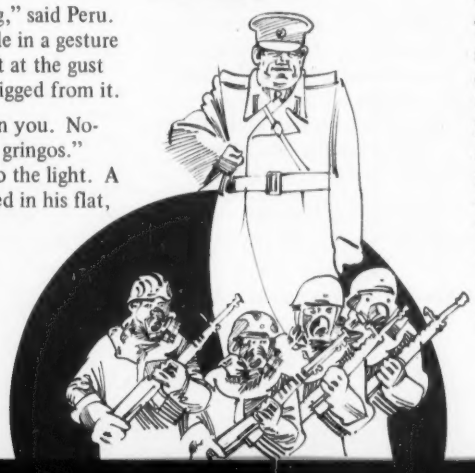
"Better the pig than you. Nobody fuck you but gringos." Bolivia stepped into the light. A cigarette smouldered in his flat, copper face. Peru squalled and tried to heave her bulk from the chair, but Bolivia, graceful beneath his shapeless, faded poncho, stepped forward and pushed against her large breasts with one spread hand. She sank back with a creak of old leather, sausage legs paddling the air.

The laughter stopped abruptly when she hurled the bottle. It rang against the bone of Bolivia's forearm, was deflected to thud against the cardboard wall, then shatter on the floor.

Guatemala stepped between them, raising his arms to still the mutter of curses. "*Basta, basta!*" He scraped up a few fragments of glass with the edge of one huaracha, and with a show of importance consulted the wristwatch he wore. On the dial, a happy Mickey pointed the hour with swollen white hands.

"*Companeros,*" he said softly, "*amigos,* pretty soon Russia coming. One hour."

The Malay spat, but said nothing. There was shifting and rustling in the room. Russia was not a person they particularly liked to see. He was running to fat, with glazed eyes and a permanent, fixed smile. He stank of fish, and his constant, loud laughter was humorless and inscrutable. But he had new trucks and tools, and rockets that could be hidden under a coat but that could stop a fighter plane. Some mouths went dry, and some fingers itched, at the thought of those things.



She's looking good these days." Italy toyed with a smile at the corner of his full, mobile mouth. "The thing with Japan must be good for her." He was standing next to Belgium, a portly little man with gold-rimmed spectacles. They were watching her bronze shoulders twisting in awkward beauty as she turned to greet passing guests. Hair pale as aluminum cascaded down her back, and the stars of precious stones flashed from her arms at every small movement.

"From a certain point of view." The portly man looked at his shoes, and then at the ceiling encrusted with chandeliers. From the rear, with thumbs in his waistcoat and elbows spread a bit, he looked very much like a penguin. "Personally, I never cared for her as much as – " he waved peremptorily, " – others."

"Oh but you too have known the blues because of her."

The two men exchanged a look

of jaded nostalgia. As if on cue, the orchestra swung into an old Josephine Baker tune.

"An experience, no?" Italy said, but not as a real question.

"Yes, ha. Tell me, what was eet like?"

They turned and found a man behind them, one of the few brown-skinned people present. They told, with a faultless show of *camaraderie*, but by subtle shifts of posture they drew slightly away from him. Mexico, like Morocco and India, had been admitted to the cotillion with raised eyebrows and looks askance. He wore pointed boots and a string tie, and there were great silver medallions in his belt. Like Morocco's excessive lipstick and billowing kaftan, these details of dress betrayed an unfamiliarity with the usual standards of taste and decorum. In addition, Mexico manifested a continuous, thinly disguised lechery with respect to the ladies in the room, and the platinum blonde beauty especially.

"She's gotten a bit hard in recent years," Italy concluded. He gave an absent smile and bent to brush his lips over the hand of a fortyish but still beautiful dark-haired woman who had approached. "Ah, *la belle France*," he murmured. "An inadequate phrase."

"So. Gossiping." She smiled mechanically at Mexico. "But he's right. A discernment we all expect of the descendants of the Romans. When I first knew her she was ravishing. A virgin as wild as a leopard and nearly as dangerous. But such flanks. *Incroyable*."

"Quite so. Devastating. Certainly too much for Britain." The three of them exchanged a quick look, while Mexico continued to grin like a hyena.

Much later, a few of the guests retired to an oak-panelled library muffled in heavy drapes and thick rugs. They sat on the floor in a circle, and she brought out a large canister of white crystalline powder and a small ivory spoon. One by one they inhaled spoonsfull of the powder, sighing and sniffing and laughing a little.

"Bolivia," she said, with a toss of the pale hair. "I guess it's the best."

"We would expect nothing less my dear," said Denmark. "You always give the best."

"Naughty." She giggled. Japan, beside her all evening, had taken to simply gazing on the cocked, golden legs. They were long, firm, and shaped so perfectly they took his breath away. Britain had told him it was the result of hamburgers, french fries and frozen sweets, basted by saltwater and sun. So for a time he stuffed himself at cheap food palaces, but stopped when he developed dizzy spells. French fries, he concluded, were *yin*. She interrupted his meditations with a long fingernail laid along his jaw.

"You know, honey, you make love like a bee." They all laughed at Japan's startled expression. "Don't worry. I like it."

"Let's go to the ocean and watch ships come in." It was Sweden, blond and langorous by the door.

"Sailors, you mean," someone called, and they all laughed again.

"Is there petrol, my dear?" Pale and time-worn, Britain contrived nonetheless to look elegant in his dark suit. They all appreciated his correctness and the sallies of dry wit, despite the lines of pain scored in his face by the advance of terminal illness. Also, as he was the first of her lovers, he commanded a certain dignity in the group.

"There had goddamned well better be." She pouted fiercely. "After what I did to get it."

She was, they assumed, referring

to the intense affair she had had with Arabia, Kuwait and Iraq, a "torrid tetrahedron" as one of the gossip magazines had put it. At that time she had remarked to someone that the three dark-and-handsomes made love like snakes. Of those present, perhaps only France, a shrewd rival, and England, an indulgent intimate from the past, understood the cleverness of her metaphors: how the reference to the serpent evoked the Biblical context as well as the saga of Cleopatra; and how the bee's black and yellow color was apt for the oriental.

Even as a little smile played about her lips, however, France found herself impatient and contemptuous. A predisposition for what was vulgarly known as "the main chance" was the mark of adolescence, perversity, and rebellion. She had gone through the stage herself. But to continue with the habit, in the twilight of youth – this was boring. Of course *les noirs*, of a certain breeding, could be quite thrilling. But even so – *mon dieu!*

Russia had gone, and they had begun arguing their way through the half-bottle of vodka he left behind. A few trucks, a handful of machine guns, a very few rockets – and all only as a promise in the future. Already they were fighting over the imaginary scraps. The Malay and a Tongan whose face was bracketed in cicatrices flashed knives at each other, but were quickly separated. Some of the group had taken a new girl, recently released from the Pacific protectorates, out behind the shack. She was fat, stupid and young, and the squeals and pants of her education came out of the darkness like a musical backdrop for the conversation around the hearth.

"Worse than the rats." Guatemala tossed his head toward the open rear door.

"We live worse than rats, *que no?*" Bolivia squatted by the open firepit of blackened clay, where the television set was wedged. The gray light of the screen glanced across his face, occasionally sparking a reflection in deepset eyes. "They don't hunt the rats anymore. They hunt us."

"Bah!" Peru sneered. "You should expect it. Sneaking around, leaving bombs – which half the time don't work – shooting policemen. You make trouble. You don't have balls. You are stupid. Anyway, you used to hunt *them*." She jerked her head at the low doorway at the front of the hut. A nearly naked Indian squatted there, his face blank. "Filthy things."

"That was long ago," Bolivia said. "We have learned." He dug under his poncho and produced a crumpled pack of cigarettes. He took out one cigarette and tossed it on the dirt floor in front of the Indian, who did not move. *"Por ti'*," he said. *"Pametakotena."*

"We had great times, *también*." Guatemala sighed, and took one of the cigarettes the other man offered. They sat for a while, smoking in silence, remembering. They had gone on mules and balsa rafts along the rivers, hunting the little brown people mostly for profit, but also for sport. They used the women for their pleasure, shot the recalcitrant warriors, and herded the rest back across the mountains to sell to the plantations. A good life, in the open, with new country always ahead of them. Plenty of money in their pockets, they were able to visit the large settlements on the coast and buy tickets to the magic light shows, where gringos were revealed living in their world of gorgeous colors. Sometimes they could even afford women almost white, who smelled like candy.

But in time most of the *chunchos* learned to go to the missionaries or *patrones*, offering themselves as slaves without a fight. A scattered remainder hid in the forest and were not worth the trouble of rooting out. Traffic fell off badly on the rivers, and the men were reduced to cutting fruit with hooked knives, or stacking boxes in the match factory, or driving taxis, and were scarcely better off than the people who had once been their stock in trade. They even offered shelter and a few scraps of refuse to those like the Indian in the doorway, who came out for whatever reason from their homelands.

The *chuncho* still had not moved. He was a Campa, from the Tambo River Pajonal, and had been sent on a most important mission by the six families who made up his nomadic community. There were troublesome signs among his people. The red star *kira-kiri*, like the bad, inflamed eyes of their children, had begun to wink and shudder. Other strange stars had appeared, moving swiftly, silently through the sky. A boy died. A *machiguenga* from across the river told them the *virakochas* were going to come with their iron beasts, but would give them new, sharp blades and plenty of food and salt, for cutting down a few useless trees. But others in the village said that the *virakochas* wanted to capture the Campa and make oil out of them, which was burned inside the iron beasts to make them move.

So he had come, speaking to no one because no one knew his tongue, to watch and see if Indians were being turned into oil. He had seen things already much more sinister. Overhead the stiff-winged birds sounded a slow thunder, but no one looked up. The streets were full of roaring iron beasts. There were no animals except the wheeling vultures, the rats disappearing under the houses, and pigs and chickens in the mud of the streets. He had no idea how the people ate. In the market they showed things in their hands, or gave coins, and got food in return. But there were far more people than the heaped mangoes and beans and potatoes in the market could ever feed.

The thing the *virakochas* did to Indians – he supposed they were Indians, from their hair and eyes – was worse than crushing their bodies to get oil. He had expected to see places where the corpses would be stacked, stinking in the sun; or large vats with fires under them, men with paddles, and heaps of bones and skulls. There were none. But the souls of the people had been taken. You had only to look into their eyes. The bodies were

uninhabited. They laughed and talked and moved about. But there was nobody inside. Or a *virakocha* was in there, living in a stolen body. They did everything then for the white men, without even being asked. That meant their souls were lost. Utterly lost. Perhaps sneaking under the buildings like rats. He felt faint.

They caught the Secretary at the door, and would not let him shrug out of the light overcoat he wore against the early autumn coolness. She put one hand at the back of his neck and teased him with her eyes.

"Everyone's going," she said. "Poo on the old embargo. Come on."

"But – " he tried to remonstrate, waving vaguely at his briefcase. Sweden slipped under his other arm, and he felt her clove-scented breath in his ear.

"Leave it. Enough reports and commissions. My God, you've done the job." Playfully they kissed him on the cheek from each side.

In a flurry of fur wraps and coattails they vanished into the row of limousines. The impassive chauffeurs, as black as the automobiles except for slashes of collar, cuffs, and teeth, locked shut the heavy doors and drove away from the curb, the whole line moving together, stretching and contracting like a great, segmented worm.

They went from spot to spot, passing under the scrolls of light, the pale shafts sweeping the sky. They moved inside a ring of uniformed men, through crowds. From above, these undulating clearings looked like amoeba crawling between the buildings. Inside, performers in spangles twisted and howled in a pool of red light. It was dark, and smelled of ice and hot metal.

Then, on her whim – her whims had grown louder – they drove fast down the narrow twisting streets away from the glittering heart of the city. Flocks of chickens exploded before the tires, and once the lead car hit a burro. It thrashed in the muck, sobbing hoarsely, as the others drove over it. The idea was to see the moon on the lagoon, and have an impromptu beach party. Then, on a final impulse, she turned the expedition into a race, instructing her driver to dodge down alleys suddenly, backtrack without warning.

Rounding a corner, they came suddenly upon what appeared to be a poor *cantina*. A few drunks were slouched against one wall, and an antenna canted crazily over the adobe roof. What they at first thought was a half-naked boy, crouched at the entrance, darted directly into the headlights. For one instant they saw the face, the eyes and open mouth making dark holes, the hands thrown up like leaves flashing pale undersides in a high wind. Then a soft but solid shock through the car frame.

Cursing between clenched teeth, the chauffeur skidded in the mud. The car batted aside a few sticks supporting a pot over a dead fire, lurched against the doorway of the *cantina*, and came to rest with one headlight glaring into its interior. Bodies swarmed in and out of the beam, clutching clothes or cookingware.

"Jesus Christ on a crutch," she screamed into the driver's ear. "Why did you do that? You –"

"Easy, easy, love." The Secretary was hurriedly adjusting his loose tie and eyeglasses, kicking bottles under the seat. From the back door of the shack he saw a man and a woman emerge. She was staggering slightly. The man carried an ancient, single-bore shotgun. The Secretary pressed a button and panes of bullet-proof glass rose swiftly from the door panels. Then he picked up a phone from a cradle recessed into the front seat. Before the receiver reached his ear, there was a sigh of wind through the thatches of nearby huts. The wind came from the 24,000 tent flaps thrown back simultaneously at the bivouac of the ever-alert presidential guard. They slept always in full riot regalia, helmeted heads resting in specially shaped pillows, loaded submachine guns and teargas launchers at their sides.

When the Secretary's phone lifted a switch was thrown, radioing an instant alert, automatically turning on barrack lights, launching new computer programs that began printing out the names of persons to be detained. Reflexes trained for months brought sure hands to the auxiliary electric circuits that kicked over tank motors, whose blast of exhaust also contributed to this sudden breeze. Likewise, the portals of secret missile sites yawned open; blunt projectiles tipped with a whirr toward their targets. One of these massive doors hung for a moment, grated against its moorings, and the resultant sound carried, like thunder, for miles.

Now from the cardboard and tin and palmfrond warrens all around them heads protruded, then whole bodies. The faces were empty, the eyes steady. Into the glare of the headlights

came other men with ancient guns, or machetes, or even shovels. From inside the limousine, they could see a mouth writhe here and there, but the tight windows kept out all sound but a hum from the finely-tuned engine.

"Get a fix on us," the Secretary said quietly into the receiver, "and stand by. Steady as she goes."

Guatemala shifted the long shotgun from one shoulder to the other. He raised his head a little, nostrils flared, uneasy at the rising wind and distant rumble in a cloudless sky. The Secretary saw this hesitation and touched another button on an armrest. A panel retracted in one fender to reveal a screened speaker.

"I want out of here," the woman said tightly. She stared ahead, clutching her fur piece to her throat. "Get me out of here."

The Secretary took a small microphone on a cord from the console in front of him. "Don't fret, my dear. We can handle this easily. Very easily."

Through the tinted, bulletproof glass, he smiled and waved at the people outside. To them he had the appearance of some species of friendly, aquatic life. Then he spoke into the microphone.

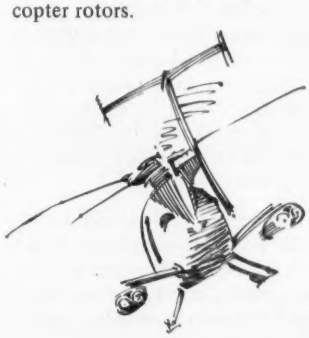
"Good evening, *et bon soir, y buenos noches, und Guten Abend*, ladies and gentlemen! We are pleased to greet you on behalf of the International Relief and Redevelopment Commission, and to bring you news of exciting programs for the benefit of all – the poor, the sick, the hungry, and the disillusioned. In a few minutes our task force will arrive. Old and inadequate housing will be torn down, making way for new units, complete with all modern conveniences. A large central community complex – hospital, library, theater, and garrison – will provide services, security, and entertainment – including the new film comedy series starring Nora Amerique, the international bombshell!" He turned slightly and nodded at the woman in the back seat.

She faced out the window, smiling automatically and shrugging the gray fur away from her golden shoulders. Through the metal walls of the vehicle they heard a dull boom of sound, the voices of the crowd in a half-gasp, half-cheer. The Secretary raised an eyebrow and passed the microphone to her.

She breathed into it, said something in a low and throaty voice, with a little laugh at the end, and the sound grew into a roar. The limousine rocked slightly in the shock wave, and the Secretary quickly recovered the microphone.

"Thank you, Nora. Thank you very much."

During her brief address to the multitude, the Secretary had again spoken into the telephone. No sooner had he replaced the receiver than the wind rose again, and bits of straw torn from the huts gyrated madly through the street. It was now dawn, and they could see a little further in the gray light. From sidestreets came the rumble of heavy metal treads, and above they could hear the steady *thwap-thwap* of helicopter rotors.



"Now I believe we are almost ready to begin the ceremony of dedication. Will you stand back please, and prepare to salute an honorary review by our armed forces, the dedicated men who cherish and protect our national traditions, even at the cost of life itself. Hail, the National Guard!"

The chauffeur nudged the limousine into reverse and backed smoothly around to clear the roadway. From both ends of the street then came a smart column of troops in full battle dress, the front rank bearing colorful flags streaming in the wind. Behind them was a band marching to a roll and snap of drums, and behind the band thundered a column of tanks, huge but very agile. As the two contingents of the guard approached each other, it could be seen that their meeting point would be the still, small form of the Indian, which the limousine had uncovered when it backed away. A few paces from the body, the color guard executed a complicated maneuver, and in moments they brought the columns to a halt and formed a perfect square. Then the Secretary stepped out of the car, still holding the microphone, and made a simple signal.

The square opened on one side and a tank equipped with a scoop and blade moved up and began to level and grade the area. The small body vanished under the treads. The Secretary's amplified voice boomed out over the growl of the motor.

"Great strides in the progress of a nation are not made without cost. Our people's history is a history of glorious sacrifice, from the first hero, who wrested our destiny from the hands of barbarians, to the common footsoldier who now keeps the lonely vigil of our threatened frontiers."

The tank had completed its operations. A crew of workers entered then with ready-cut

stones. They swiftly erected a structure as the secretary continued to speak.

"And beyond these are the common, loyal citizens from all quarters of our country. They too are often called upon to make the supreme commitment. They, too, though unsung and often forgotten, bring honor to their people, sometimes in small ways, sometimes in great. For people are like nations, each man summons from the distant provinces of himself every resource to devote to the good of all."

The stonesetters had finished their work with a layer to close the top of the plain, rectangular sarcophagus. Ironmongers then set around it a highly wrought railing, with a single, narrow gate. The color guard had been augmented by twenty-one young men in sky-blue uniforms set off by white caps, gloves and spats. They bore rifles at attention across their breasts. All of them were blond. The band played a soft dirge, with heavy drumbeats, in the background.

"So, too, men look back upon their lives to commemorate their deeds and rededicate themselves to the struggles of the future. For ultimately we must look outward and beyond ourselves, both as nations and as men. The mind of man is like the government of a nation; to survive and prosper it must have hand and heart at its service, yet together it must be a whole and vital being; and, finally, it must transcend its mere historical condition, as pure *spirit*."

The Secretary lifted his eyes to the sky, just as the first shafts of sunlight struck the tips of the flags and the turrets of the tanks. Two young women with long, unbound hair and loose robes had taken up a position on top of the platform, inside the iron railing. One held a flaming torch, of the kind used to inaugurate international games. The other bore a small-mouthed marble urn. At one corner of the monument an old man in overalls, with soiled hands, knelt to affix a bronze plaque to the cornerstone. He did not seem disturbed by the events around him. In fact, he had been especially chosen for his work because he was deaf. On the plaque was depicted a man with bulging muscles, bending a bow to send an arrow heavenward.

"To one among us who has fallen tragically in the service of his people, we therefore dedicate this shrine. Salute him, this hero of our age!"

The Secretary brought his hand to his brow in a sure and practiced gesture, and an instant later the twenty-one blond young soldiers brought their rifles to their shoulders and fired, as one, into the air. There was an echoing crack, and a row of smoke plumes.

"And over this noble heart we place a never-dying flame, a symbol of our eternal gratitude. A sacred flame rises from this body, this being becomes essence, sending forth a light to guide us all – men and nations – to truth!"

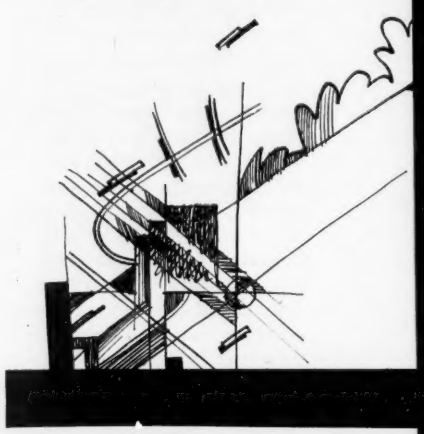
The woman with the urn knelt and deposited it in the center of the bier. The other woman knelt and held aloft the torch. The Secretary beckoned to the woman in the car. When she stepped out hesitantly, he ushered her swiftly and a little precariously – because of her high shoes – to the monument. She tried a smile, bit her lip, and then took the flame and touched it to the urn. A yellow tongue leaped skyward.

The Secretary nodded and the soldiers in blue again raised their rifles and fired. The band struck up a stirring march. As the color guard began its wheel and retreat, trucks rolled into place, dropped their side panels, and revealed vats of hot food and stacks of cheap cotton pants and shirts, and bins of plastic toys. At the same time, bulldozers began to grind at the fringes of the neighborhood, ironing the shacks flat and pressing their remains into the mud.

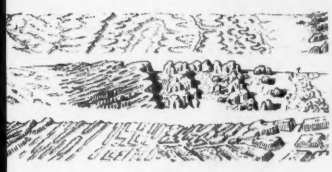
As the Secretary and the lady got back into their car, the people were lining up at the trucks, laughing and jostling. They waved, cheered, and did impromptu dances as the long, black limousine went by. The other limousines had also found their way to the quarter at last, and now fell in behind the leader. There was much honking and waving back and forth. At the edge of the neighborhood they encountered the ring of tanks and more trucks. When the side panels of these trucks were dropped, they revealed grim men behind automatic weapons. A man in dark khaki stopped them briefly to smile and make a small joke before waving them through.

Back on the smooth asphalt and picking up speed, they looked at each other and grinned like children out of school. The Secretary placed a hand on the round, smooth knee of his companion, and winked at the chauffeur in the rearview mirror. Someone lit a cigarette and a radio went on. Far behind them were dull, explosive sounds, perhaps jackhammers and the bulldozers. Perhaps not.

At the stone memorial, the yellow flame flickered and jumped, sending smoke upward like threads of black, greased hair. ■



All we know of the author is that she is a Tarascan Indian woman born near the town of Patzcuaro, Mexico. Her political activities are reason to protect her anonymity behind the nom-de-plume, Xochi. The translator is a Mexican counselor interested in developing native Hispanic psychologies and literature. The illustrative background is the landform map of Mexico by Erwin Raisz ($2.05 postpaid from 130 Charles Street, Boston, MA 02114). —SB



XOCHI

Translated by Luis Morones

At the other end of this knotted rope
that surrounds my soul like a lasso
I am feeling this enormous tug.

Someone is screaming from the other side
that I hand over hand begin the descent
into the mouth of the terror that dangles
below me.

Tata Huriata is knocking on the ceiling
of my dreams.
He is whispering hard secrets
into the delicate ears of my groin.

He is combing the hair of my unconscious
into pre-Columbian braids.

I awoke this morning with screams
discovering that someone during
the long night had rearranged my hair
and painted my face with wierdly familiar
designs.

Someone is weaving out of the flimsy gauze
my elusive dream life is made from an enduring
hat that topples my awakened consciousness.

Someone is pulling so hard the spider-web thread
that links me to my dreams that my soul is set
spinning like an ancient, holy top that whirls
over a desecrated geography
breaking open with its spinning heat
the concrete mask with which we have paved
the continent and revealing underneath
the original face of a tortured people.

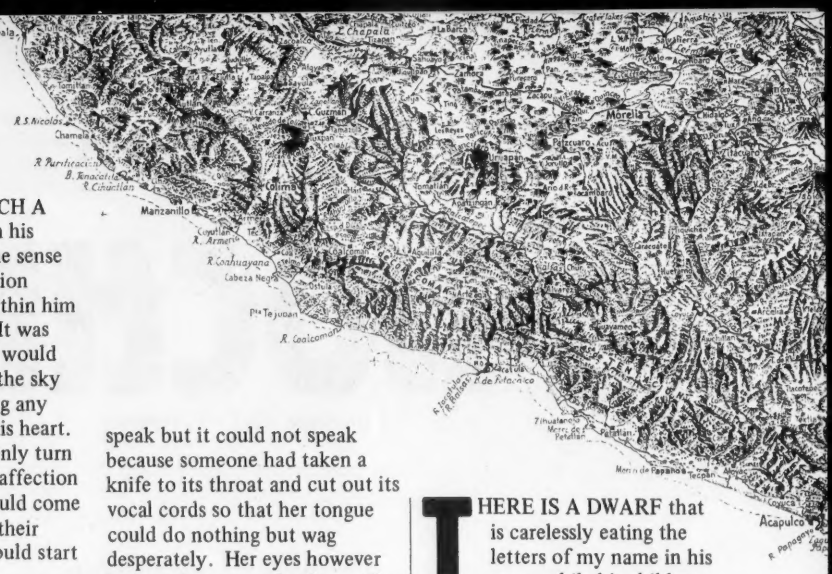
At the other end of this knotted rope
that surrounds my soul like a lasso
I am feeding this enormous buffalo
whose gigantic head grows each time
another animal-god is butchered.

I awoke this morning to find my night fingers
entangled in my hair because while I was unconscious
they tried to comb the fibers of my brain
into the pre-Columbian braids my butchered mothers
wore on the night of the Conquest. □

continued

XOCHI

(conintuned)



HE WOULD REACH A certain point in his prayer when the sense of inner liberation that was taking place within him would suddenly cease. It was as if an iron-barred gate would fall unexpectedly from the sky and keep him from going any further on the path to his heart. Something would suddenly turn on him and the flow of affection and inner expansion would come to a sudden halt and in their place a metallic wolf would start charging his interior.

The warm, gentledove of the breath became a lawyer dressed in steel and spurs. On his leash there was a creature with razor-sharp teeth that would start gnawing at the prayer's groin.

The pull towards love would suddenly become an iron hoop that was tightened around the anus until free breath became impossible.

Time after time this would happen. Prayer would be the gateway to heaven and then suddenly turned into the trap-door to hell.

On this particular night he was on his knees before the image of Christ. Prayer had been pouring out of him with ease until that point was reached again when the boulders began to materialize in his chest and the muscles began to tighten at all the vital places of his body. His vision began to blur and the blurring became so extreme that all turned into darkness and the darkness was so complete that it soaked all the way into his chest.

When he began to regain his vision he noticed a crack down the center of the image of Christ splitting it into two halves that suddenly swung open and revealed within the mutilated image of the Virgin Mary. The statue of Mary was trembling and its wooden lips quivered to speak but it could not speak because someone had taken a knife to its throat and cut out its vocal cords so that her tongue could do nothing but wag desperately. Her eyes however had not been completely mutilated and it was in them that Her plea was formed. It was in them that the agony found expression. They were two raging bulbs of Love – intense love betrayed. He looked at Her and screamed for Her, a scream that did not end but that reached into infinity, that reached all the way into the left ear of God, that reached the womb of Her eternal Mother.

It was the scream of an infant girl being mutilated at birth by the dogs that had dressed themselves as priests. The Mother heard Her daughter screaming through him and responded by splitting Her daughter's statue into two halves that swung open as doors revealing within an Aztec goddess with uplifted fists clenched in the face of the murderous sky.

Out of Her eyes burst a spray of black, crystal tears that had been formed by the tremendous pressure She had for centuries been carrying in Her chest, repressing Her heart. The man who had been kneeling gathered and strung the scattered black diamonds Her eyes had released into a new rosary which he prayed for the first time tonight and when he reached the point in his prayer where in the past he had felt something precious betrayed tonight he felt himself instead embraced by the liberated Goddess. ■

THERE IS A DWARF that is carelessly eating the letters of my name in his soup, while his children run around the table screaming. They are fighting for the pieces of my nose that have been chopped into their meat.

I know all this tonight because I am weeping. There was a knock on my door earlier this evening and when I went to see who it was I discovered a bloodied, breathless, sweating letter of the alphabet at my threshold. He was one of my name's letters and perhaps also one of yours. His face was half devoured by some merciless gnawing. Teethmarks could still be seen all over his delicate eyelids. His legs could no longer hold him so he was kneeling in front of me begging for me to listen to his story. It was he who told me about the family of dwarfs that live in between the great underground circles with which few human beings are familiar.

Apparently it was during one of the darkest nights of the year when the families of all of our names were traveling through the forest. Since they were unfamiliar with the terrain in this particular part of the country, they had hired someone from outside their number to serve as their temporary guide. It is no longer clear who this guide was. Some say it was a woman. Others say it was an old man. Who the guide was is not now important. What is important is

that the guide turned out to be a traitor. Instead of leading them safely through the great protective circles, he deliberately took them outside of the circles into that dangerous no-man's land inhabited by the dwarfs who are always lying in wait, ready to ambush anyone wandering into their territory.

The dwarfs made a brutal attack on our letters, killing most of them and taking the survivors as prisoners. The prisoners were taken to a huge concentration camp that was situated under the earth. As soon as they were thrown into the prison the letters gathered together instinctively into their family groupings, forming once again the words to which they belonged. An enormous magnetic attraction pulled the letters into words and meaningful wholes even here in the dungeon's darkness. Even here in their living tombs the force that united them did not cease to operate, and one could see the shadows cast by the quaking letters as they huddled together to form the appropriate names. Their tormentors however would not allow this and they pulled the letters out that had gathered into words, then they began tearing the letters apart from each other. They were ripped away from each other with knives and chisels, saws and acid. Great screams could be heard throughout the land as the flesh of our names was torn apart, eaten into by acid, suffocated by gases, and chewed through by teeth. One letter would be hurled against the floor while another was being chopped into little pieces or castrated. Each letter was so brutally and efficiently tortured that one could no longer recognize it or the word to which it had originally belonged. The clowns among the sadists then entered the room with skeleton grins on their faces as they set upon the letter corpses and amidst screams of murderous glee began to rearrange the mutilated bodies so as to form new absurd configurations. They created monstrous looking nonsense words by taking the decapitated head of one letter and placing it on the bottom of another. They took the dots among our "i's" and stuffed them into the torn mouths of our "o's." They broke apart the arms of the "y's" and stuck them into the shattered breasts of our "b's." They ground up the shattered flesh of our names and poured it into their pepper shakers.

The letter who had managed to escape and was telling me the story begged me to help rescue the remaining letters that are still awaiting their execution. It is because of him that I am now raising this plea. Our names and our most meaningful words are now in danger of being executed or of becoming absurd. We need to do something to save them and our own identity.

In a kindergarten class not far from here, in the impoverished district of our city, a group of children are being asked at this moment to spell their names for the very first time. Several of them are enduring a great anguish because when they try to put down the letters that belong to them on the paper, their little hands grow rigid and then start to tremble because they can't seem to connect to the necessary letters – because the necessary letters are at this instant being carelessly eaten by the dwarfs that tonight I am setting out to find, accompanied by the wounded letter of my heart. ■

CONTRA RAYMOND

by Richard Baldasty

Raymond buys tequila, airplane glue, artichokes, and, in season, kaleidoscopes. He cultivates miniature roses and puts the petals from spent blooms into a Chinese-y potpourri. He always knows exactly what he was doing five minutes ago.

Who is this demon?

He styles himself an anarchist. He says he seeks the one totally gratuitous act. He went to Australia solely to photograph masonic lodges. He had plans to fly a crop duster over the Vatican and "get those aphids out of the papal hair." When permission was not granted, he said he should have applied in Latin.

He is obviously out of control.

He painted "Banana Remnants" in acrylic on a canvas 134' x 15'. He painted it predominantly off-off-beige but dramatized two small, freckled, yellow swatches, one curling in the lower right, the other flat and octagonal at dead center. Are they the remnants? Raymond was asked at the unveiling, and he nibbled at his sleeve.

Something must be done before he goes too far.

When he ventures forth to perambulate the boulevards, he slips his left hand glove onto his right hand and places his right hand glove atop his head. Everyone who passes

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Richard Baldasty wrote "Flo and the Sharks" in the Spring '78 **CQ**, *and has a collection of short odd creations called* **The Psychiatric Exam** *($2.25, Seattle Book Company, Box 9254, Seattle, WA 98109.) He has an M.A. in modern European history and teaches college history and philosophy.*
—Anne Herbert

laughs, but, because he cannot see his own pate, he assumes they are chuckling over some private matter. Discreetly, bemusedly, he laughs back.

There ought to be a law.

At some time or another, he has ad-libbed the following certitudes:

Millions of cows are bored by modern society. Plankton fluoresces when one pisses in the ocean. Bhutanese homes, albeit poor and cluttered with marzipan idols, are homes of charm, particularly in Bumthang, the jocularly-named capital. Ants kidnap accountants and use them in sex games. The decline of America is the predominant leitmotif of our time. As long as you don't think yards and yards of shiny material are being purchased to lure you into an institution, all is well.

We are in gravest peril.

He is phobic about steppe wolves, savanna cats, and police impersonators. He farts self-consciously when he swaps anecdotes with the latter. He believes Uzbeks will swarm into the neighborhood and open noisy boutiques. He writes megatherian, which means "characteristic of a genus of gigantic, prehistoric ground sloths," on public lavatory walls.

Our children begin to mimic him.

He foiled a superette stickup. He hit the thug with a bag of thicker chips for dips, grabbed her grenade, tossed it into the parking lot where only dervishes and Winnebagos were injured. And so he became the latest hero. Scantily-clad policewomen bussed him on television. The White House arranged an evening of booze and gold ribbons. Raymond inhaled one of the decorative helium balloons and, in Donald Duck voice, told our leader, "You can't play water polo, sweetie, wearing those bottle bottom glasses."

Empires have fallen and vanished into the sands because they lacked the will to act.

Raymond slices mushrooms laterally, incising their firm, buttony little bodies for evenness, smoothness, on each surface. He sautees them in fresh creamery butter, acquaints them with salt and pepper and a squeeze of lemon. He cools them briefly. Then, when their moist, greased sides are most adhesive, he sticks them on library windows.

Wherever he comes from, there may be more like him.

He talks incessantly about the R which begins his name. It's called the dog's letter because its trill resembles a growl. Raymond uses it to herd sheep, those numerous ruminant mammals, and to chase ol' bluesy melancholia up the furthest stickery tree. He runs with a pack of afghans. He and they wear sweaters emblazed with his monogram.

His cohorts may be preparing to cross our borders.

He invited one thousand corporate chairmen to a party and served them cupcakes. Their companies' names were spelled backwards in the frosting. He insisted that they rewrite their titles and salaries accordingly. Then he dropped trou and wailed at them, "Ai, ai. Onerous is my onus. I must swim indoors because I sunburn so easily. See: my buttocks are pale as parchment against shy snow."

Perhaps the others are already here, just waiting to see if he, the vanguard, will succeed.

Raymond is directing a sci-fi flick about a gargantuan mantis who terrorizes North Dakota until the people get smart and let him keep it. Raymond daydreams about what would happen if all insects were fed hormones.

Smell the coffee. Look out the window. Reality itself is at stake, and tinder's piled high for the burning. ▪

ROOTS
O'NEILL .. WHO WENT TO THE SUPREME COURT OF THESE UNITED STATES AND LOST .. 9 TO ZIP .. WILL NOW BURN UP THAT CREDIBILITY IN A DISCUSSION OF THE REPUBLIC!
WE DON'T KNOW MUCH ABOUT MY GREAT GRANDFATHER ... BUT WE ARE FAIRLY SURE HE WAS SOME KIND OF CROOK ..
WANTED
SOME OF OUR FINEST CITIZENS TRACE THEIR FAMILY ORIGINS THROUGH PRISON RECORDS ..
THERE'S AN OLD CALIFORNIA SAYING THAT GIVES US A CLUE AS TO THE GENEALOGY OF THE LOCAL SOCIETY CROWD ...
"..THE MINERS CAME IN '49 .. THE WHORES IN '51 .. THUS YOU HAVE THE GENESIS .. OF YOUR NATIVE SON .. "
+A DYNASTY ABOUT TO BEGIN+
MY GREAT GRANDPA IS BURIED IN BERKELEY ..HE COULDN'T HELP IT .. THE SEWER CAVED IN .. ..TRAPPED THE ENTIRE CONSTRUCTION CREW ..
IN 1972 (BEFORE ROOTS BECAME A POPULAR T.V SHOW AND PARLOUR GAME ..) I WENT TO IRELAND ..
.. LAND OF POETS AND HOD CARRIERS .. IT'S SAID THE IRISH ARE GIVEN WHEEL BARROWS AT BIRTH .. FOR THE DAY THEY LEARN TO WALK ..
AFTER SHOVEL TRAINING, THE JESUITS TAKE OVER ..
.. WHERE IN THE EMERALD ISLE DO WE FIND THE O'NEILLS .. ? HO HO HO ... IT'S A TERRIFIC PLACE ..
BELFAST ..
..IT SCARED THE SHIT OUT OF ME ...
IT WAS BOMBS AND BULLETS AND BARBED WIRE SOLDIERS AND TANKS AND SNIPER FIRE ..
..HOME TOWN FUN?
IRA FOOT TRAFFIC DIRECTOR
.. FOR FIVE MONTHS I WANDER AROUND WONDERING WHY BELFAST ? WHY COULDN'T GREAT GRANDPA HAVE COME FROM PARIS .. OR ROME .. SOMEPLACE WITH SOME FUN !! THIS TOWN WAS WEIRD !! I KEPT THINKING .. "WHY AM I NOT BACK IN SAUSALITO IN THE BAR DRAWING ON NAPKINS FOR DRINKS .. ? "
.. THIS WAS THE ANSWER TO THE QUESTION "WHY DID GREAT GRANDPAP GET THE HELL OUT .. ? " THE IRISH ALWAYS ANSWER A QUESTION WITH A QUESTION .. EVEN WHEN TALKING TO THEMSELVES ..

A SMALL SLICE OF IRISH HISTORY... RELAX, NOT MUCH..

IN THE LATE 18TH CENTURY, REVOLUTIONS WERE A FAD.. WE HAD ONE.. THE FRENCH HAD ONE.. AND THE IRISH HAD ONE.. ANOTHER ONE.. THEY HAD BEEN HAVING THEM FOR ABOUT 800 YEARS BUT MOSTLY THE PITCHFORK-AGAINST-CANNON VARIETY..

IF YOU WANT A REPUBLIC, GO TO AMERICA!!

ANYWAY.. AFTER THIS ONE FIZZLED, THE HEAD HONCHO OF THE ENGLISH HAULED THE IRISH UP AND TOLD THEM **ONCE AND FOR ALL**.....

THIS PARTICULAR HONCHO WAS **SENSITIVE** TO THIS KIND OF **NONSENSE**.. HIS NAME AT THE TIME WAS **LORD NORTH**.. IN AN EARLIER DIFFICULTY HIS NAME WAS **CORNWALLIS**.. RIGHT!! THE GUY WHO GOT CAUGHT BETWEEN THE FRENCH AND WASHINGTON.. HE WAS **REALLY** EMBARRASSED.. ..DID **NOT** WANT TO REPEAT THE EXPERIENCE..

CORNWALLIS HAD BEEN RATED AS A MEDIOCRE GENERAL.. BUT GOOD ENOUGH TO WHIP WASHINGTON AND MAINTAIN THE STATUS QUO IN THE COLONIES.. AND HE WAS.. UNTIL THE FRENCH SHOWED UP..

EVERYONE KNEW THAT THE BRITISH GENERALS WITH TALENT HAD BEEN BUSY WITH NAPOLEON AND A THIRD RATE GENERAL LIKE CORNWALLIS SHOULD HAVE BEEN ABLE TO **NOT** LOSE THE COLONIES AND THE FRENCH **WERE** A BAD BREAK.. AND BESIDES...

EVERYONE HATED DEALING WITH THE IRISH AND **HE** SCREWED UP.. LET **HIM** DEAL WITH THEM..

ANYWAY.. CORNWALLIS IS REMEMBERED FONDLY FOR HIS ADVICE.. LOTS OF FOLKS LEFT.. BY THE MID 19TH CENTURY, OVER FOUR MILLION OF THE EIGHT MILLION POPULATION HAD DECIDED IT WAS TRUE.. ONE CANNOT EAT ROCKS.. WHICH WAS ALL THAT WAS LEFT AFTER THE THIEVING BRITISH WERE THROUGH..

"THOSE WHO SURVIVED THE TRIP (HALF DIDN'T) DIDN'T HAVE IT ALL THAT EASY.. IT WAS AND STILL IS A PROTESTANT EMPIRE HERE.. BUT THERE **WERE** JOBS.. AND A VOTE FOR THE IRISH.. ..THEY HUNG TOGETHER AND CARVED OUT A PIECE OF THE ACTION.. ..BY 1900, SOME IRISH WERE EVEN CONSIDERED WHITE!!

MOTHER ENGLAND BUILT HER EMPIRE ON A **DIVIDE AND CONQUER** POLICY.. AND HER PRODIGAL CHILD AMERICA LEARNED THIS LESSON WELL.. THE IRISH HELPED SHOOT INDIANS, SUBDUE THE BLACKS, CUT OFF THE CHINESE PIGTAILS.. ANYTHING FOR A LIVING WAGE.. VICTIMS OF RACISM, IN COMPETITION FOR A SQUARE MEAL WITH THE OTHER VICTIMS.. NOT A NICE TIME FOR ANY ONE..

THE IRISH IN IRELAND DON'T UNDERSTAND THE AMERICAN IRISH **EXPERIENCE**.. NOT HAVING LIVED THROUGH IT.. STILL, THEY ARE WILLING TO ACCEPT GUNS AND MONEY FROM THEIR "**FOREIGN** BORN" COUSINS..

I DID RESENT BEING CALLED "FOREIGN BORN".. BACK IN THE STATES, THE INDIANS ARE "**NATIVE**" AMERICANS.. NOT ME..

.. YOU BEGIN TO WONDER **WHERE** IN HELL YOU **DID** COME FROM..

ONE LESSON, I SHALL ALWAYS BE GRATEFUL FOR, WAS THE TIME I MET AN IRISH PROTESTANT.. WE WERE IDENTICAL PHYSICALLY.. SAME EYE COLOR, SKIN, HAIR, BAD TEETH.. BUT I HAVE A CATHOLIC NAME.. SO TO HIM.. I WAS THE..

NIGGER..

IT'S **ALL** IN THE MIND, FOLKS!!

IN IRELAND, THE HOMEGROWN IRISH WOULD TELL ME **YANK** JOKES.. IN THE STATES, I GREW UP WITH **MICK** JOKES.. BETWIXT AND BETWEEN.. **ROOTS**, I DECIDED WERE FOR PLANTS, **NOT** PEOPLE AND I WAS GRATEFUL FOR A GREAT GRANDPA WHO HAD THE SENSE TO BE BURIED IN A BERKELEY SEWER.. I LEFT IRELAND WITH THE SURE KNOWLEDGE THAT IF YOU THINK YOU UNDERSTAND IRISH POLITICS, YOU ARE MISINFORMED..

MY BANJO.. I NEVER GO TO WAR WITHOUT A BANJO..

Box 428, Sausalito, CA 94965

..AND WHAT DID THE KID LEARN IN IRELAND..?

BELFAST

..WHERE YOU CAN SEE A KENT STATE EVERY DAY.. AND THE ONLY THING CHEAPER THAN TALK IS YOUR LIFE..

AND THIS IS, IT SEEMS, HOW REPUBLICS ARE BORN.. IN A RIVER OF BLOOD..

AND ONCE BORN, HOW SAFE AND SECURE IS A REPUBLIC? AFTER 200 YEARS OF BEING A REPUBLIC, IT STRIKES ME AS INTERESTING THAT A SHAH GAINS ENTRY TO THE U.S. BECAUSE ONE ROCKEFELLER WISHES IT.. NO ONE ASKED ME ABOUT LETTING THAT PERSIAN IN..

I WAS HURT..

HO HO!

..AND WHAT ABOUT THE RUMOR THAT ALL OF THE CANDIDATES FOR PRESIDENT ARE APPROVED BY THIS MONEYED MAN IN THE CHASE MANHATTAN..? AND AFTER HE APPROVES OF THE BUNCH, WE GET TO PICK ONE..?

IN IRELAND, A CATHOLIC UP NORTH HAD NO VOTE.. A PROTESTANT HAD A VOTE FOR OWNING LAND, A VOTE FOR OWNING A BUSINESS.. AND ANOTHER VOTE FOR BEING A NICE GUY.. AFTER A LOT OF NOISE, CATHOLICS GOT A VOTE.. AND THEN ELECTIONS WERE CANCELLED..

MAYBE.. JUST MAYBE, BELFAST IS MORE HONEST THAN WHAT WE'RE FACING..

FOR RENT

IN EARLY SPRING, 1865, MR. LINCOLN GAVE A STRANGE SPEECH..

..ONE OF HIS LAST SPEECHES..

"..I SEE IN THE NEAR FUTURE A CRISIS APPROACHING THAT UNNERVES ME... AND CAUSES ME TO TREMBLE FOR THE SAFETY OF MY COUNTRY.. CORPORATIONS HAVE BEEN ENTHRONED.. AN ERA OF CORRUPTION IN HIGH PLACES WILL FOLLOW.. AND THE MONEY POWER OF THE COUNTRY WILL ENDEAVOR TO PROLONG ITS REIGN BY WORKING ON THE PREJUDICES OF THE PEOPLE.. UNTIL THE WEALTH IS AGGREGATED IN A FEW HANDS.. AND THE REPUBLIC IS DESTROYED.."

THAT SPEECH PROVES LINCOLN WAS A COMMIE!!

..CAN YOU IMAGINE A ROCKEFELLER APPROVING OF THOSE SENTIMENTS?

IT IS TO LAUGH!

I INTERVIEWED THE LOCAL COMMANDER OF THE IRA IN DERRY AND HE HAD AN INTERESTING VIEW ON THE SUBJECT OF REVOLUTION..

..UNLESS YOUR REVOLUTION BENEFITS EVERYONE IN THE SOCIETY.. FROM TOP TO BOTTOM.. IT IS MERELY A REBELLION..

WE WERE HIDING IN A VOLKS..

J. W. BOOTH ALTERED MR. LINCOLN'S HAT SIZE RADICALLY.. A FEW WEEKS LATER..

..DOES THIS MEAN SOME OF YOU ECOLOGISTS ARE GOING TO HAVE TO LET SOME TREES BE CUT DOWN SO A LOGGER'S KID CAN HAVE A NEW PAIR OF SHOES..?

..AND AS MUCH FUN AS IT IS BLOWING UP CAPITALIST TOILETS.. IS IT FAIR TO YOUR FELLOW AMERICAN..

- EVEN ROCKEFELLER IS AN AMERICAN..

THAT'S A CLUE, KIDDO..

BELFAST IS WHAT YOU GET

..WHEN YOU DON'T HAVE A BALLOT BOX..

IF YOU HAVE A VOTE.. THEN YOU CAN AVOID THE IRISH EXPERIENCE.. THE STUFF OF A REPUBLIC IS VERY MAGIC.. EVERYONE IS RUNNING AROUND LOOKING FOR HOPE.. AND IT'S SITTING THERE IN THE CONSTITUTION..

TRANSLATED LOOSELY, THE CONSTITUTION SAYS..

"YOU WILL ALL LIVE TOGETHER IN THE SAME COUNTRY AND **NOT** KILL EACH OTHER.."

NOW **THAT'S** HOPEFUL..

..BUT WHAT ABOUT THE **SLA-NWLF** FIELD MARSHAL BAR-B-QUE THEORY OF SOCIAL CHANGE..?

RETROGRADE.. WE WENT THROUGH THAT IN 1776.. THIS IS 1980.. TIME TO GET SERIOUS..

..NEVER SAY THINGS LIKE THIS IN BOSTON..

..IT'S ALL RIGHT FOR THE **IRISH**.. THEY'RE 200 YEARS **BEHIND** US..

QUESTIONS:

..SUPPOSE AN INFORMED AND **CURIOUS** ELECTORATE EMERGES IN THIS DECADE..? SUPPOSE THIS COLLECTION OF CURIOUS FOLKS STARTS **WATCHING** THE GLORIOUS LEADERS IN THOSE MARBLED HALLS..?

STEP ONE.. **CURIOSITY**..

CURIOSITY IS A **BEGINNING**.. BUT **HOPE** IS THE CHILD OF **ACTION**...

YEAH.. WELL.. YOU CAN VOTE CONGRESSMEN **OUT** EVERY **TWO** YEARS.. AND **PRESIDENTS** EVERY FOUR YEARS..

STEP TWO:

IF CONGRESSMEN (AND WOMEN, TOO.. LET'S BE FAIR) WERE VOTED **OUT**.. ALL INCUMBENTS **OUT**.. NO PERFORMANCE.. **OUT**! AND THIS HAPPENED EVERY TWO YEARS.. IN SIX YEARS, WE WOULD HAVE **THREE** DIFFERENT CONGRESSES.. SENIORITY WOULD MEAN YOU'VE **BEEN IN** CONGRESS FOR A YEAR!! SHUFFLE THE DECK! GET THE TALENT WORKING.. QUIT YOUR BITCHING..

..WHAT IS THIS **MYTH** OF A TWO TERM PRESIDENT? WE HAVEN'T HAD A TWO TERMER SINCE **IKE**..

ROCKEFELLER CAN BUY A FEW CANDIDATES.. ..BUT **NOT** AN **ENTIRE** CONGRESS EVERY TWO YEARS..

IT **CAN** BE DONE..

FINAL WORD ON ROOTS

SCREW ROOTS.. IT'S TIME WE CRAWL UP THE TREE TRUNK.. MAYBE WITH SOME EFFORT, WE COULD BE IN THE BRANCHES WITH THE BIRDS AND SUNLIGHT BY 1990..

FINAL WORD.. THIS ISSUE.. ON NATIVE AMERICANS.. AFTER 50,000 YEARS RESIDENCE HERE DON'T YOU THINK THEY SHOULD BE GIVEN A VOTE..?

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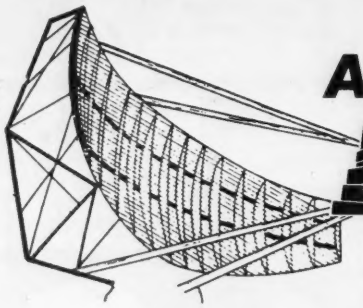


ABOUT THE END OF CIVI L

by Peter Laurie

Recent international events to do with Russians and Americans caused a considerable amount of unease in these islands. Suddenly nuclear war stopped being that old joke in *Dr. Strangelove*, and became quite imminent. The thought, for many years neglected, that in several places in the world there were actual men with real red buttons within reach that could indubitably cause the EOCAWKI mentioned in the title to this piece came to the fore of people's minds. One hoped – quite fervently on the days when the news was bad – that these chaps had slept well, breakfasted on an egg, and were thinking logically. One feared that they might be sweaty, overtired and prone to say, sooner or later, 'Oh *fuck* it.' And press the button.

As the author of a book about civil defense and the British Government's very elaborate secret plans to protect itself under these circumstances I got a fair amount of exposure recently on TV and in the press. I was usually asked the question that was uppermost in my own mind: 'if *it* happens, what is there for us?'

This piece is a digest of recent ignorant thinking on the subject presented in the hope that CQ readers may find it interesting if not cheerful.

For some reason, World War Three is billed as the 'Unthinkable'. I wish it were. Suppose that the invasion of Afghanistan had gone a bit awry (it still might). Suppose that the Americans had decided to do something military in Persia. Suppose that the Russians wanted to send some navy round from Archangel to hinder convoys in the Atlantic – a squabble in which NATO ships and aircraft from Scottish bases would play an important part. Suppose the Russians decided to abate this nuisance – not by striking at military targets with nuclear weapons, because that would trigger a general nuclear exchange which they would lose – but by persuading the Scots to take their point of view. They might announce that unless Britain stopped hosting the imperialist-running-dog-provocateurs Glasgow would get it right in the neck.

The good citizens of Glasgow, given a week to think over this proposition, might become somewhat agitated. They might stream out of their city and spread like bad-tempered locusts over the land. The disruption to life in general and the armed forces in particular might be spectacularly aided, no doubt, by organized elements in contact with the Russians.

The Swiss Civil Defence handbook charmingly refers to all this as: 'Trâitrise, défaitisme et pacifisme, propagande et déclaration d'amour.' The police and home army would be at their wits end to keep order. This threat against Glasgow will have produced two themes of action among the British people: attempts to protect themselves against coming nuclear doom, and attempts to dissuade Mrs. Thatcher and her associates from their reckless courses.

Official preparations for public civil defense are scanty. The citizen will be left to shift for himself. But people who have contrived themselves fall-out shelters will be almost in a worse state than those who have not. Imagine the scene: you put off the choice of making a shelter. You felt sure that our leaders were too sensible to come to nuclear extremities. But, unthinkable, there was the flash, there was the rumble and the heaving of the land, there, over the horizon is the towering mushroom cloud. The radio says that fallout will start to descend in an hour. The streets are ominously quiet. You cower in the darkest recesses of your shattered house wondering what to do. After awhile the rain starts – a rain of dust. You have no way of telling but you know that it is intensely radioactive. It blows in the windows, settles in the childrens' hair. You brush it off but more comes.

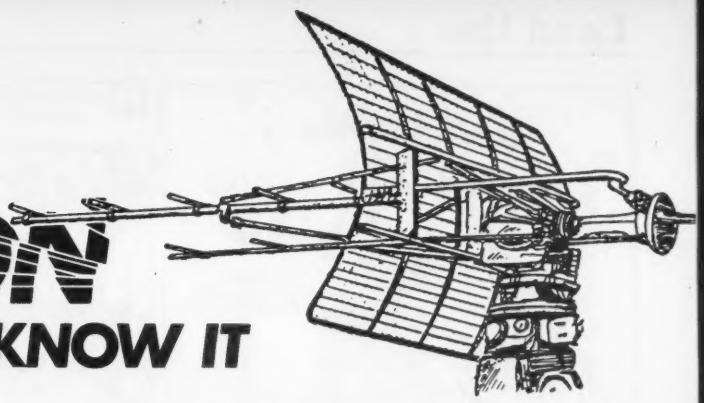
Your neighbor, you know, has made himself a neat shelter. He collected food and water. He took down doors, built a cave and heaped earth from the garden over it. You laughed at him for doing it. Now you think: If we – if *I* can get in there in the next hour I will live. You go and get the carving knife – you really have nothing to lose.

Unless everyone has a shelter there is little point anybody having one. Could we have followed the Swiss or Swedish models in providing a shelter for every home, a communal bunker for every village, hundreds of underground hospitals, barracks and command posts, accomodation for our whole armed forces under thousands of feet of rock for years at a time? The Swiss have built up a most impressive CD system over fifteen years and claim that it has cost them only 1.5% of GNP. Why haven't we?

There are several reasons. The first is that while Switzerland and Sweden are thinly populated with no nuclear weapons, no targets and plenty of solid rock subsoil, Britain is densely populated, has hundreds of military targets, has the H-bomb and is built largely on soft earth. The Swiss can plan on a war in which they have to cope only with some drifting fallout from the European theatre and perhaps some stray missiles. Sweden too is hardly on the way to anywhere exciting – both countries can fairly easily make themselves sufficiently unpleasant to deter military sight-seeing trips.

This is not the case with us. Military targets are so plentiful in Britain that one would have to put every city, factory and stockpile several hundred feet underground in order to save a reasonable proportion of them. And however much we put underground, there will still be something on the surface to shoot at. But still, suppose that we can bury ourselves, there is still a serious difficulty. Because we have the H-bomb ourselves, an effective civil defense system would itself be an aggressive weapon. If, in a period of mounting international tension, Mrs. Thatcher advised us that now was the moment to go

LIZATION AS WE KNOW IT



below, the Russians would quite reasonably take this as an infallible sign that we intended to attack. Arguing that war was inevitable they would fire immediately in order to catch as many of us on the surface as possible. Or, if we managed to get underground, they might wait for a fortnight, a month, three months – and catch us when we came up. This is poor protection.

So, the first theme of civilian behavior before an attack would be frantic and possibly fruitless attempts at self protection. The second would be political: to try to get the government to change its stance on the Russian question. The conventional methods: lobbying, sarcastic and revealing newspaper articles, censure motions in the House of Commons, strikes, demonstrations, riots, can be ruled out. Time is too short. If anything is to succeed it must be direct action. Persons of the livelier sort will, no doubt, resort to Whitehall to lay their grievances before the proper authorities. Doors will be knocked on and if not answered, broken down.

But surprise, surprise, there will be no one at home. The obvious way to defend the government against nuclear attack is to split it up into several dozen small pieces which are spread about the country in well protected bunkers. The activists – who, from the government's point of view, are now as much its enemies as the Russians, and much closer at hand – who wanted a word with Mrs. Thatcher will find her gone, leaving no forwarding address. She and her Cabinet might be in Essex or Cornwall or Gloucester or the Hebrides. She might be in any of those places, but the Chiefs of Staff might be somewhere quite else. Even supposing you found the nerve center and overran it, a second layer of government in some quite different place would activate itself, spring into action and repair the hole. The system is prettily designed to be almost impervious either to missile or mob.

Furthermore, the internal revolution would find itself severely hampered in its communications. The telephone system would not work. Neither would the posts. Radio transmissions would be instantly fixed by a chain of huge computer controlled direction finding stations (the USAF has one at Sandy in Bedfordshire). Travel would be difficult without either petrol or the motorways. On the other hand the government would have excellent communications by microwave, radio, cable, satellite, land, sea and air.

The chance of a successful revolution getting off the ground under these conditions is very slight indeed. (And made no better if the Russians go on nuking British cities). 'So!', the patient reader exclaims, 'this *is* a nice state of affairs. THEM safely underground while we on the surface are blown about by every fallout laden political wind and not a pair of lead-lined knickers between us. How kind of the politicians to spend our money to protect them against us.'

This is true up to a point, but there is yet another twist in the logic of the situation. If we cannot find Mrs. Thatcher to make our grievances known in the traditional manner the Russians cannot regard us as potentially useful allies – however badly they manage to frighten us – so there was no point in nuking us in the first place. When threatened, we can only spread out our hands and look ineffectual.

Logically, there is no point vapourizing the ineffectual. One hopes that the Russians – or whoever our enemies may be – think logically. If they do not, we are in trouble.

Would it be a help in that trouble if we had Civil Defence? Our masters seem to have gone to some trouble to make sure we do not: were they right? One can imagine two kinds of counter city strike against British cities. In the first, one or two cities are devastated as an example to the rest of us. Quite apart from our political actions, we will want to do something for the survivors. There is no need to have a specialized, expensive civil defense organization to take care of that problem. The government would use the ordinary resources of the country through the ordinary channels.

In the other kind of attack our enemy deluges us with missiles aimed at as many targets as he can find. They may be civilian or military – it really doesn't matter. The result will probably be 20 or 30 million casualties, 20 or 30 million survivors. (It is very hard to kill more than that in these islands). Could we not have saved more by good civil defense?

Very possibly so. But would we want to? Nuclear war on that scale is very likely to put a stop for many years to international trade – assuming that anyone anywhere has anything left to trade with. We import half our food. Most of our oil. All of our metals, cars, typewriters, machine tools . . . You name it, we import it.

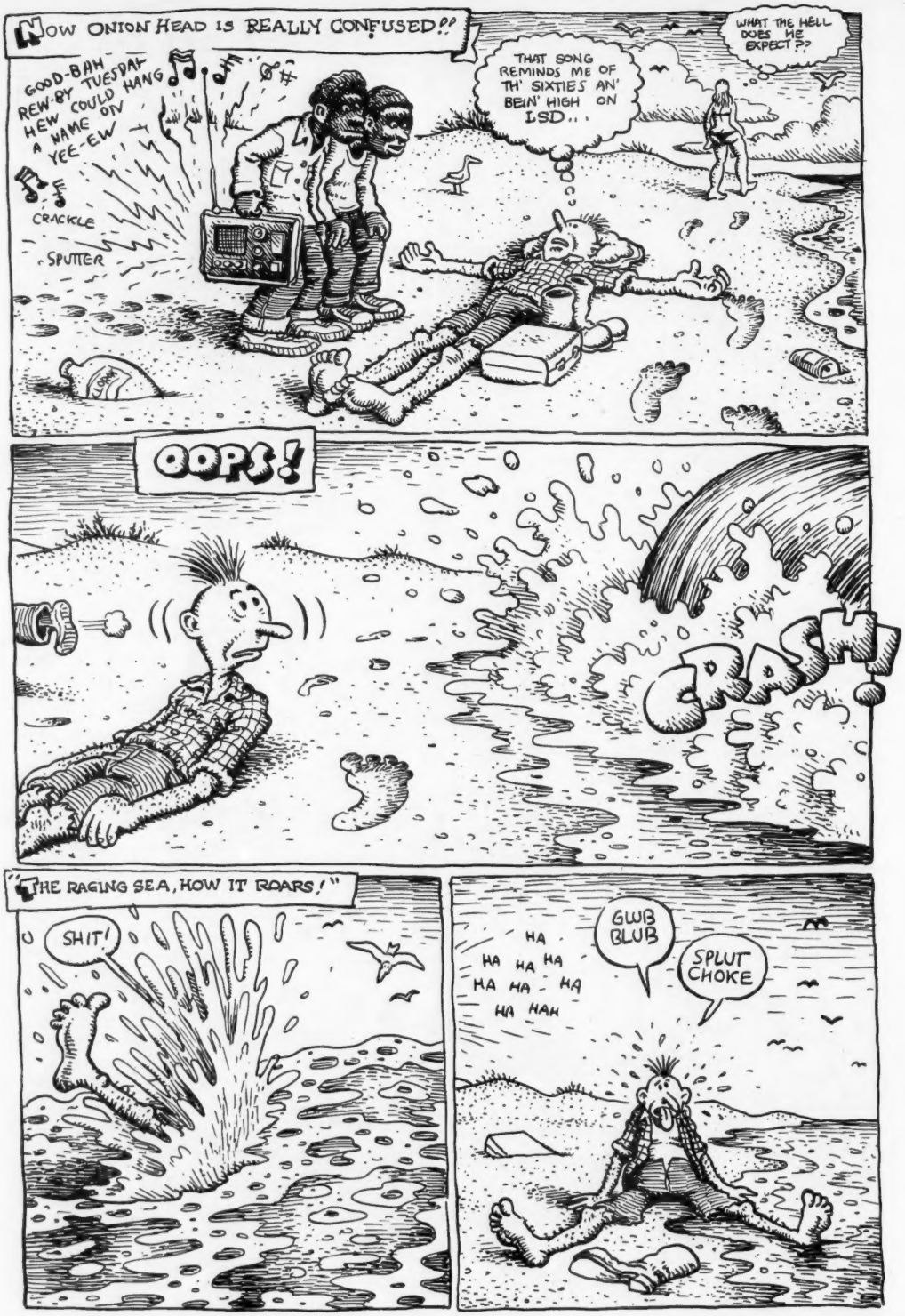
A nuclear war which destroyed international trade and threw us back on our own resources *without killing anyone* would be worse in the long run than a nuclear war that killed twenty million. At least, after that the survivors would have some wealth. Their economy might be shattered, but they would have more farm land, coal mines, railways, railway engines, computers per head than before the war. They would have some chance of rebuilding the British Way of Life As We Know It. A war that killed hardly anyone would set us up for a civil war to decide who survived the peace. Better to die by an enemy's hand than one's neighbors.

So it might well be that our masters' odd neglect in providing us with good public civil defense is based on a realistic understanding of the matter. They do not want us all to survive. If we understood properly what survival will entail, we would not want to survive.

But this is not a message that a politician cares to take to the voters. ■

The ADVENTURES of "ONION HEAD"
by R. CRUMB
"LIFE IS LIKE AN INFINITE ONION."
©1980
HIS TRIALS AND TRIBULATIONS BEGAN IN THE WINTER OF HIS DISCONTENT.....
DAD, I MUST LEAVE THE OLD HOME... I GOT SOME THINGS TO WORK OUT, AND I... UH....
MMYEAHM...
WELL, KIDDO... I GOTTA GO SLOP TH' HOGS... SO, UH, TAKE CARE O' YERSELF!
...SLOP TH' HOGS...
I'M GONNA GO ROB TH' RICH AN' GIVE TO TH' POOR...
OKAY... DON'T GET HURT, BUDDY...

ONION HEAD SETS OUT...
TO ROB THE RICH AND GIVE TO THE POOR... HEIGH HO...
BEFORE LONG HE IS DISILLUSIONED...
I'M NOT GETTING VERY FAR...
FREEWAY ENTRANCE
NO PEDESTRIANS OR BICYCLES BEYOND THIS POINT
WHATSIT INC.
BESIDES THIS ROBBING THE RICH BUSINESS COULD BE DANGEROUS... AND I DON'T EVEN HAVE A GUN OR A KNIFE.!!
MAN, THIS SUITCASE IS HEAVY.!!
OH, HERE'S AN OCEAN, OR A SEA, OR WHATEVER YA CALL IT...
I'M ALL IN... GUESS I'LL CALL IT A DAY...
TOMORROW I'LL RE-THINK THIS WHOLE PROJECT... MAYBE I SHOULD LOOK FOR A JOB... START AT TH' BOTTOM AN' WORK MY WAY UP...


NOW ONION HEAD IS REALLY CONFUSED!!
GOOD-BAH REW-BY TUESDAY HEW COULD HANG A NAME OIV YEE-EW
CRACKLE
SPUTTER
THAT SONG REMINDS ME OF TH' SIXTIES AN' BEIN' HIGH ON LSD...
WHAT THE HELL DOES HE EXPECT??
OOPS!
CRASH
"THE RAGING SEA, HOW IT ROARS!"
SHIT!
HA HA HA HA HA HA HA HA HAH
GWB BLUB
SPLUT CHOKE

HIS AMERICAN DREAM TURNS INTO A NIGHTMARE...
HA HA HA HA HA HA HA HA HA HA HA
OH CHRIST... THEY'RE ALL LAUGHING AT ME... I'M SO EMBARRASSED!!
AZZOLE!
HEY!
GET OFF YOUR HIGH HORSE, MAN!
YOU FUGGIN' SCUM BAG!
BUT—
NO, I—
SUDDENLY IT HITS HIM...
THERE'S NO HOPE
NO HOPE!
GIGGLE
TEE HEE
WHAT IS POOR ONION HEAD TO DO NOW?
MY GOD - IT'S TRUE!
NO HOPE!
GET GOIN', YEW!
I'M HUNGRY... GOESS I'LL GO HOME...
LOST MY JACKET...
ONLY GOT ONE BOOT...
HIS JOURNEY COMPLETE, ONION HEAD FINDS A PLACE IN THE SCHEME....
HE'S SOBERED UP NOW...HE'S A GOOD BOY!
I'VE GOT A LOT TO LEARN...
HERE PIGGY PIGGY
HUALP
END

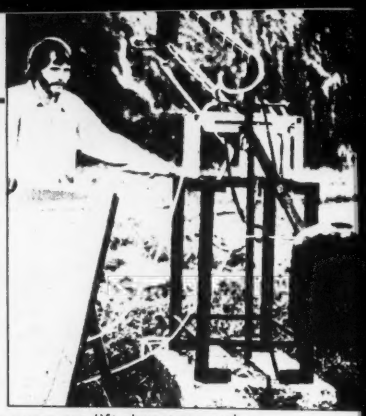
Farm Show

This nifty little newspaper has something in common with our magazine — it contains no advertising. Focusing exclusively on new products and product evaluations, it is like having the information from a yearly farm equipment show mailed to your house — with one important difference. Because there are no ads, tips on poor products and bad buys are included too. Editor-publisher Harold Johnson lets his readers handle this chore in a regular write-in feature.

Farm Show *is a good place to follow the incredible amount of tinkering going on as American farmers look for alternatives to expensive or scarce gas and diesel fuel. You won't find any horse-drawn plows here, or any discussion of the moral or ecological consequences of large-scale grain-alcohol fuel production, but there are farmers out there running their tractors and trucks on wood chips, old crankcase oil, and hydrogen.*

—Richard Nilsen
[Suggested by J.D. Smith]

Farm Show
Harold M. Johnson, Ed.
$9/year (6 issues)
postpaid from:
Farm Show Publishing, Inc.
P.O. Box 704
Lakeville, MN 55044
or Whole Earth
Household Store



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In bright sunshine, the solar pump can lift almost as much water in an hour as any similar-sized windmill would in a good stiff breeze. It cannot rival the windmill for its maximum performance. But DeBeer claims that, in the longer term — like several months — his device "outperforms a windmill by far."

Plans for the solar pump are available for $24.00 (American dollars) from: Invent-A-Plan, 76 Montpelier Rise, Wembley, Middlesex HA9 8 RQ, England

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Melvin Frueh, Donnelson, Iowa: 'It was a lemon from the first hour on, with bolts falling out, power steering locking up and the transmission oil filter plugging every five hours," says Melvin about his "worst buy" 2390 Case tractor. "When they tore it down after 60 hours, they found that some wear washers in the rear end had been left out at the factory. The dealer was helpful in getting things right, but the tractor I traded in — a 1370 — was nearly the same way. In 800 hours, it was down at least six times."

On the plus side, Melvin salutes his International 820 grain platform. "You can get nearer to the ground to get those low-standing soybean pods and make the field look as if you cut it with a lawn mower. Also, the cutting knife is faster so you can drive up to 4.5 mph and not strip the stems off. I've even been in a field with a John Deere row crop head and done just as good a job, yet can still use my head for small grain and drilled soybeans, which you can't with the Deere model."

The Land Report

This four year old non-profit research farm has its eye on the future of our bread-basket, the Great Plains. And a good thing too, when you consider that for every bushel of corn taken out of the Midwest, something like two bushels of soil are lost to erosion. The organic content of Midwest soils has declined in the last 100 years by about 50%.

Disturbing the soil each year to grow annual crops like wheat and corn is a big part of the problem. In contrast to a monoculture of annuals, the Land Institute is investigating polyculture with perennials — seed-bearers like Easter Gamagrass grown in association with legumes.

They also have about 10 college students working for credit each semester. Recently the Institute has been coming up with facts and figures to rebut the grain-alcohol-as-fuel panacea currently in vogue.

—Richard Nilsen
[Suggested by Thom Leonard]

The Land Report
Dana Jackson, Editor
$3/year (3 issues)
postpaid from:
The Land Institute
Route 3
Salina KS 67401
or Whole Earth
Household Store

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One day in the spring of 1883, as a Scandinavian farmer, John Christiansen, plowed his fields in Montana's neighbor state of North Dakota, he looked up to find that he was being watched — not by a stockman . . ., but by an old and solemn Sioux Indian.

Silently the old Indian watched as the dark soil curled up and the prairie grass was turned under. Christiansen stopped, leaned against the plow handle, pushed his black Stetson back on his head, rolled a cigarette. He watched amusedly as the old Indian knelt, thrust his fingers into the plow furrow, measured its depth, fingered the sod and the buried grass.

Then the old Indian straightened up, looked at the farmer.

"Wrong side up," he said, and went away.

from "Prophet of the Grass" by Joseph Kinsey Howard. Vol. III, No. 3, page 271.

Organic farming experience for city dwellers

This idea began in Great Britain and is very simple: non-farm people who want to get their hands dirty and find out where their food comes from work for weekends or longer on organic farms needing extra labor. The exchange is room and board for experience, and an organization (in Britain, Working Weekends on Organic Farms — WWOOF) acts as a clearing-house to bring the two groups together.

Since Mark Boudreau proposed the idea in the Winter '79/'80 **CQ**, *he has gotten an organization called Sativa off the ground for the midwest. Workers can come from anywhere, but the farms Sativa lists are in Ohio, Indiana, Michigan, Illinois, Wisconsin, Missouri, Iowa and Minnesota. The first newsletter lists 10 farms in 5 states.*

For the western U.S., a similar group is just getting organized. Called Western WOOF (Western Workers on Organic Farms) they cover "the western states, including Alaska and Hawaii."

—Richard Nilsen

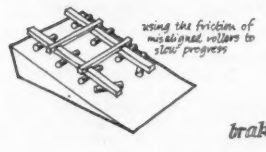
Western WOOF
$6/year (6 issues)
postpaid from:
Western WOOF
1525 Lakeside Drive #5
Oakland, CA 94612
or Whole Earth
Household Store

Sativa
$4/year (6 issues)
postpaid from:
Sativa
Box 2410, Station A
Champaign, IL 61820
or Whole Earth
Household Store

Soft Technology

Moving Heavy Things

I remember once watching in wonder as a lone man carried a full size upright piano up a flight of stairs! 600 lbs. How did he do it? This marvelous little primer by the inimitable Jan Adkins (world's youngest Old Salt) brings to us mere mortals the secrets of manipulating weighty objects. Not only are the secrets well explained and illustrated, the essential spirit is properly attended. The book encourages independence. Every household should have one. —J. Baldwin



Moving Heavy Things
Jan Adkins
1980; 48 pp.
$6.95 postpaid from:
Houghton Mifflin Co.
Wayside Road
Burlington, MA 01803
or Whole Earth
Household Store

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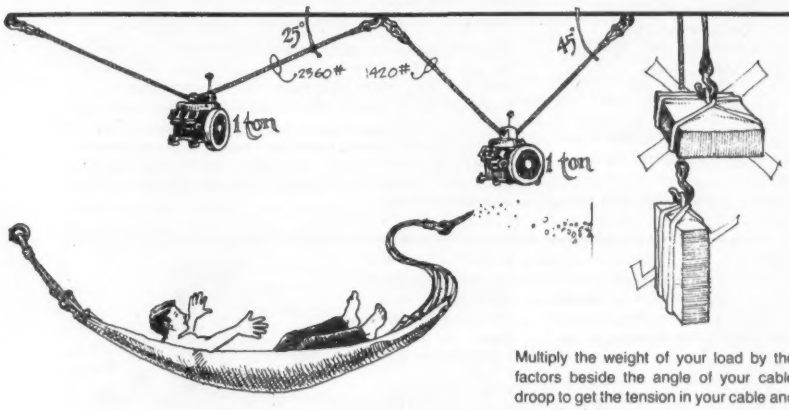
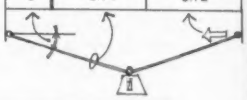
Precept Five:
Applied Sloth
As stated in the stagehand's axiom: "Never lift what you can drag, never drag what you can roll, never roll what you can leave." Creativity germinates in indolence, and the cleverest people are often the laziest: they are always looking for an easier way. The easiest way is often the simplest, most direct, and the best way.



ANGLES

∠°	tension	pull-out
90°	.5	0
80°	.51	.10
70°	.53	.18
60°	.58	.29
45°	.71	.50
30°	1.00	.87
25°	1.18	1.07
20°	1.46	1.37
15°	1.93	1.86
10°	2.88	2.83
5°	5.74	5.72

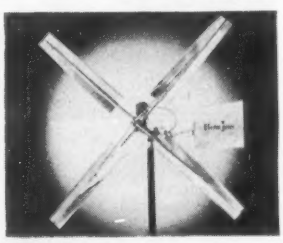


Multiply the weight of your load by the factors beside the angle of your cable droop to get the tension in your cable and the pull-out force.

Bowjon Windmill

The Bowjon system is essentially an air compressor with blades on it, appropriate tubing to the well (so the windmill need not be near the well!) and an air-lift pump that moves water without moving parts to clog or fail. Sounds good, and basically it is. My personal experience with the machine is that it is not especially well engineered in the small details; things loosen and get wiggly all too easily for instance. But the idea is a good one, and anyone with a bit of machanic experience can beef things up to a reasonably reliable level. Not having to locate the mill over the well can be a great advantage when the well is in the valley and the wind is on the hill. This is the only machine I know of that solves this problem at a decent cost. If the modest output meets your needs, you should at least give it a look. The compressed air can also be used for other things. —J. Baldwin

Bowjon
(Windmill/Air Lift Water Pump)
about $800
information from:
Bowjon
2829 Burton Avenue
Burbank, CA 91504
or Whole Earth
Household Store



How To Build A 'Cretan Sail' Windpump

Very clear plans for making this type of sail wing machine. The design is very similar to that used in Peter Fraenkel's **Food From Windmills** *(See* **Next Catalog***) and shows very good performance per dollar at low wind speeds. These are the plans I'd use.* —J. Baldwin

How To Build A 'Cretan Sail' Windpump
R.D. Mann
1979; 79 pp.
$7.50 postpaid from:
Intermediate Technology Development Group of North America, Inc.
60 E. 42nd St., Suite 1231
New York, NY 10017
or Whole Earth
Household Store

Superinsulated Houses and Double-Envelope Houses

William A. Shurcliff is one of those people who does homework for the rest of us, and I'm always glad to see his latest efforts. In this case, he has tackled a controversial subject: do these houses work OK, and also, how do they work? As is his custom, he surveys a number of houses and elicits comments from the owners. Tentative conclusions in this first edition are that superinsulated houses are very fine if designed well, and double-envelope houses are also fine but may work for reasons as yet unproven. For this reason, he is rather reserved in his enthusiasm for double-envelope construction. But draw your own conclusions; the latest facts and figures are there, with his analysis, for you to read all in one place. Many thanks, sir! (Mr. Shurcliff asks that owners of such houses write him of their experiences for future editions.)

—J. Baldwin

Superinsulated Houses and Double-Envelope Houses
(A Preliminary Survey of Principles and Practices)
1980; 147 pp.

$14 first class postpaid from:
William A. Shurcliff
19 Appleton Street
Cambridge, MA 02138
or Whole Earth Household Store

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HALLMARKS OF A SUPERINSULATED HOUSE

The main distinguishing characteristics, or hallmarks, of a superinsulated house are:

Truly superb insulation. Even at the sills, headers, eaves, window frames, door frames, and electric outlet boxes at least a moderate amount of insulation is provided. In summary, the insulation is thick and thorough.

An almost airtight envelope. Even on windy days the rate of air change is low.

No added thermal mass. No Trombe wall, no water-filled drums, no concrete floors (except basement floor).

No very large south-window area. The amount of direct-gain passive solar heating is modest.

The combined area of windows on west, north, and east is less than the area of south windows. Perhaps only half.

No furnace. There may be some electric heaters or a wood-burning stove, but these are used only rarely.

No large system for distributing heat among the rooms.

No distorted shape of house.

Some corollaries:

There is no big added expense. The costs of the extra insulation and extra care in construction are largely offset by the savings from having no huge area of Thermopane, no huge expensive thermal shutters for huge south windows, no furnace, no big heat distribution system.

The passive solar heating system is almost incidental.

Room humidity remains at least fairly high throughout the winter. Sometimes it may be too high! There is no need for humidifiers (but there may be a need for a dehumidifier or an air-to-air heat-exchanger).

In summer the house usually stays cool automatically, if windows are opened wide each night. Even the south rooms usually stay cool: the area of south windows is small and, in summer, these windows are shaded by the wide eaves.

The Power Guide

This catalog of small scale power equipment is by far the most comprehensive and useful I have seen. Mr. Fraenkel, who brought us the excellent **Food From Windmills** *has outdone himself. Included are not only the expected windmills etc., but steam engines, diesel generating sets, and that relic that you thought nobody was making anymore, the slow-revving, big-flywheel, last-forever donkey engine. A very complete world list of manufacturers brings up the rear. This is where you look first.*

—J. Baldwin

The Power Guide
(A Catalogue of Small Scale Power Equipment)
Peter Fraenkel
1979; 240 pp.

$17.50 postpaid from:
Intermediate Technology Development Group of North America, Inc.
60 E. 42nd St., Suite 1231
New York, NY 10017
or Whole Earth Household Store

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WESTWARD MOULDINGS, LTD
Greenhill Works
Delaware Road
Gunnislake
Cornwall
U.K.
Phone: Gunnislake (0822) 832120

→

Manufacturers of fibreglass water wheels to order. Units can be overshot or breast wheels with diameters of 8 ft., 16 ft., and 20 ft. Wheels can be built to any width and can be shipped in sections and erected on site. Typical power outputs as follows:

Diameter	Width	Nominal power (max)
8 ft. (2.4 m)	2.5 ft. (0.76 m)	6 b.h.p.
16 ft. (4.8 m)	3.0 ft. (0.91 m)	25 b.h.p.
20 ft. (6.0 m)	4.5 ft. (1.4 m)	35 b.h.p.

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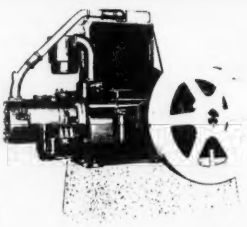
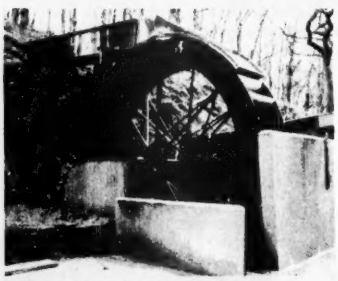
COOPER ENERGY SERVICES
19 North Center Street
Corry
Pennsylvania 16407
U.S.A.
Telex: 91-4554
Phone: (814) 665 8281



DP-60 Engine →

A range of heavy duty, low-speed, horizontal, two-stroke engines, developed for pumping oil in oilfields but well-suited for driving reciprocating water pumps. Very little maintenance required — engines have particularly long operational life.

Model	*Cylinder*	*Cooling*	*Cap. (cc)*	*Gross Power (b.h.p.) Max.*	*Cont.*	*@ r.p.m.*	*Nett Weight (kg)*
EA-22	1H	water	4340	22	17	450	1317
EA-30	1H	water	5410	30	22	450	1340
E-42	1H	water	9290	42	35	400	1961
DP-60	1H	water	13930	60	40	350	2813
DP-80A	1H	water	21800	80	60	300	3691
DP-125	1H	water	36150	125	100	280	6143
DP-165	1H	water	46330	165	125	260	6347
DP-250	2H	water	72300	250	175	250	8111
DP-325	2H	water	92660	325	230	250	8467



16ft Wheel Producing 20 b.h.p.

Fascinating letter on railroad track

SWAN'S TRACK →

Responding to "Light Rail – How to Make It Work" in the last issue, No. 25.

As a child model train enthusiast, long-time rail buff and currently as a laborer for the Western Pacific Railroad, I read Christopher Swan's article with great sympathy for his aspirations. However I believe that he glosses over several technical problems, some of which may be intrinsic to rails themselves, others requiring yet to be discovered innovations.

As a laborer in maintenance of way, I have had an opportunity to observe the many ways track can go wrong, often with disastrous or at least greatly expensive consequences. I have long attempted to imagine a better design for tracks and roadbed but many bullsessions with oldtimers in railroad bars have repeatedly convinced me that current track design, with all its problems, exists not because of entrenched conservatism, but because other proposals will not work as well.

I work in the Feather River Canyon of northern California, an area appearing much like that portrayed on your cover. A ride on a train along the roadway is certainly a beautiful experience but in spite of continuous maintenance, the area is plagued by derailments. The idea of the owners allowing the track to go to hell is false. The problem is complex and my view from the bottom of the hierarchy is too limited to speak with authority on the economics involved. However I can say a few things about the mechanics.

As mentioned, the standard gauge on American railroads is 4' 8½". Any other width between the tracks is said to be out of gauge. By far the most time spent by maintenance crews, particularly the local section crews, is spent gauging. The problem is centrifugal force, as a train lumbers around a curve, its huge mass exerts a vector of force to the outside of the curve. A vector analysis would reveal that with the momentum of the train tending to keep it moving in a straight line, and with the curve of the track tending to cause it to want to move perpendicularly out as a rotating ball on a string, the resulting force, exerted by every outer wheel on the train inexorably forces the track out of gauge. As the canyon consists of nothing but curves, the track goes continuously out of gauge.

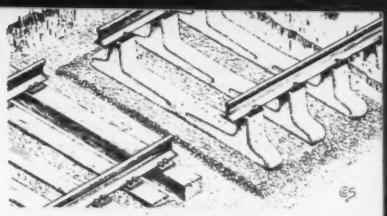
In order to correct the condition, a section crew must perform a great deal of physical labor. With a few exceptions, such as picks and shovels, it is not true that railroad tools are similar to those used on highways. Railroad tools are definitely not

light from the laborer's point of view. On large section crews and on specialty traveling crews as much work as possible is done by machine. As will be further explained later, the machines, as presently designed, are not particularly efficient, nor can they completely replace the laborer with his spike hammer.

Briefly the job of gauging consists of the following: spikes from the section of rail to be aligned must be extracted with large iron pry bars. The spikes often become notched by the outward force of the rail against them so that violent effort is required to vibrate them out. Spikes removed, the rail is jacked up, the plates are pulled out, the spike holes are plugged with a creosote impregnated stick, the ends of the sticks are adzed smooth with the surface of the tie, the plates are repositioned under the rail and the rail is dropped. Two men with ten pound spike hammers and a device to measure width called, of course, a gauge, move along the track, stopping every fourth tie to spike the rail in place. On small sections spiking is done by hand, as in the day of John Henry. The gauge spikers are preceded by men with large bars who force the track in towards its proper width. They are followed by more men who spike in the remaining three ties. In cases where a machine is used the spikes must nevertheless be set in the tie a third of their length by hand. Since the remaining two thirds can be sunk by a reasonably proficient laborer with two more swings of his hammer, the efficiency of the spike machines is often marginal. The machine tends to bend more spikes, producing cripples which must be removed, but costs much less per hour than a laborer to run. A section of rail, other than ribbon rail, is 38 or 76 feet long. A foreman and four laborers, with an average number of train delays, and with a great deal of busting ass, are doing very well to gauge six 38' sections of rail in an eight hour work day.

From 1915 through the early 1920s, I'm told by the real old timers, when sections commonly employed fifty men at 38 cents per hour, the track stayed in gauge, by damn! Of course they will admit that the trains were much lighter and less frequent. Certainly a great advantage to light rail is that the track will be stressed less proportionally to the smaller mass of the lighter trains. But more frequent use would offset, to some extent, this advantage.

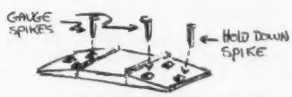
Similar forces are at work to force the track out of line, making the rail less flat, more wavey, and to drive one rail to a height different than its companion. Curved track is banked



and the proper angle is eventually lost. As far as I can determine from Christopher's drawings, there is no provision in his pylon design to correct line or gauge.

These are a few of the daily maintenance concerns. On a less frequent but more major scale, specialty crews replace ties or defective rails, improve the surface, the ballast roadbed on which the ties rest, maintain signals, phones, switch mechanisms, bridges and tunnels, to say nothing of the rolling stock itself.

A small point certainly, and perhaps not germane to this discussion, is that Christopher's picture of a railplate is inaccurate. The standard plate has six holes. Typically two spikes will be against the rail diagonally to one another while the two outer spikes help affix the plate to the tie. On curves, four gauge spikes will hold the rail.



There is a good reason for ties still to be made of wood as they are certainly no longer cheap. Should one sit along the right of way watching a train go by, viewing at wheel level, he will observe that each tie flexes downward appreciably as each wheel truck moves over it. This action serves to dampen vibration. Not unlike the old suggestion of cars with cement wheels on rubber highways, the ties help relieve what would otherwise be an overly inflexible contact between steel wheel and rail. There may be a concrete that can withstand the huge vibratory action of trains upon it, but I haven't heard of it and I suspect that without some yet to be invented vibration damper between the rail and the pylon, that the concrete would rather quickly crumble.

There are also reasons why no dirt or plant life is allowed on or near the right of way. The roadbed is comprised of a large-sized gravel, ballast, which is usually volcanic. The function of ballast is to allow rain water to percolate down away from the ties while supporting the weight of the track. Should the ballast be fouled with dirt it must be removed and cleaned lest water pool on the surface, greatly hastening the decomposition of ties. With pylons, admittedly, water would be less of a problem, but the underground members supporting them would eventually be undermined by erosion.

Box 428, Sausalito, CA 94965

Plant life near the track, as picturesque as it would be, causes a number of problems. Trains cause fires. Although most of the notorious hot boxes are gone, replaced by improved roller bearings, there remain ways for trains to be incendiary, stuck brakes and dragging lose underequipment are the most frequent offenders. And trees growing close to the tracks hold the possibility of dropping limbs in the way during strong winds.

In answer to the question, "What if state and local road crews were joined with rail crews?" my response, after talking to my friends who work for Cal-Trans, is that the majority of the road crew would quit. Rail maintenance, even with machines, is extremely difficult, dirty work. I have worked on an oil pipeline, as a cowboy putting in miles of fence post holes, bringing in a season's hay, as a plumber's helper and a number of other sweat-producing jobs in my travels and can assert without equivocation that working on the railroad is the hardest goddamn job I have ever experienced. As a matter of fact, at 35, had I not already conditioned myself to some extent in my hobby of marathon running and through it learned to sufficiently dissociate from pain and fatigue, I never could have managed to finish my first week of work.

I worked for seven months on a traveling tie gang, the largest on the Western Pacific. Of the 22 on the gang, there was me and 21 Mexicans. I noticed, as I traveled through Utah, Nevada and California that the majority of most section crews were comprised of Mexicans (not Chicanos) as well. Finding this curious, I repeatedly asked foremen and supervisors if Mexicans were hired preferentially. The almost universal response, although racist, may have contained some element of truth in it: that it's not possible to find white guys who are capable of doing nigger work, can't find blacks or Mexican-Americans who will do the work, either. It may be that recession and increasing unemployment will change attitudes and bring a clamoring for the $7.40 or so per hour the job provides.

None of the previous is meant to dispute the underlying wisdom in Christopher's plea for light or heavy rail use. Although the actual form will probably be substantially different than his design, I'm sure that the problems can be solved.

One last point. As for cars on rails, I have ridden in the railroad service vehicles, called high railers, and can attest that they can move like a bat out of hell with a very smooth ride. With the development of proper computerized signals and with track separate from the slower stopping trains, they could function very well.

Best wishes, Stewart. **CoEvolution** is my favorite publication and I'm pleased to finally have something to contribute.

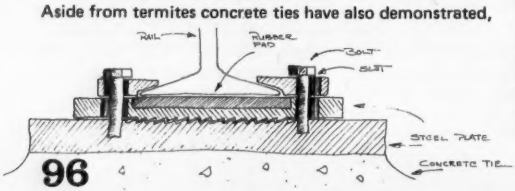
John Keith
Storrie, California

Christopher Swan replies *(Swan's reply was far too long to print in full. Here's most of it.)*

. . . I maintain, knowing it is a vast generalization, that railroads have allowed much of their track to decay. Exceptions: most of the western roads, Western Pacific, Union Pacific, Santa Fe, Burlington Northern, etc. but not most of those east of the Mississippi. I do not make this assertion on a statistical basis. Railroads would undoubtedly contest such a claim with stats of their own, and have repeatedly done so. Plus, I am generally suspicious of statistical information; it almost always is based on relatively subjective judgments. What Southern Pacific considers well-maintained track and what Southern Railway considers well-maintained and what I consider well-maintained may be three quite different perceptions. All I know is what I've seen with my own eyes and what I've heard from those in the business. I have seen a great deal of track in very poor condition, particularly secondary lines in the west and everything in the east. And I have heard from a variety of sources that railroad wrecks have dramatically increased in the past 10 - 15 years; some sources say 500% increase while others, notably the railroads, say no appreciable increase. I also know that since WWII the railroads have generally opted for longer trains focused on fewer mainlines; meaning secondary branchlines, switchyards, industrial service tracks and the like are decaying while mainlines are maintained. Railroads will come up with all sorts of justification for this trend; usually the story centers around the economics of long-hauls being far better than the short runs, and, that there are far too many underused routes that don't pay. . . .

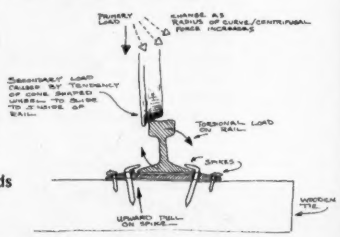
Current track design includes far more than the wooden tie, spikes and rail system common in the United States. In Africa, I think back in the '30s and '40s, the concrete tie came into use not because wood wasn't available but because of voracious termites who could devour ties for breakfast. Now concrete ties are quite common throughout Africa, Europe, Asia, Japan and more recently the U.S. — notably the high-speed corridor between Washington, D.C. and New York and the Bay Area Rapid Transit system (BART). They've been satisfactorily used for over three decades on many routes.

Aside from termites concrete ties have also demonstrated, in most situations, a greater resistance to the decaying effects of weather, soil acidity and sheer wear. Furthermore they also require less work to gauge rails and less frequent maintenance. Of course one doesn't receive these advantages for nothing. Concrete ties can be as much as four times the cost of comparable wooden ties.



BART demonstrates some exquisite engineering in the design of its track structure. Although I think the rest of the system is a very good example of precisely how *not* to build a railroad — absurdly sophisticated, far too much emphasis on high speed at all costs and an utterly dumb centralized control system. The track: precast concrete ties or continuous slabs with raised piers on which rest two metal plates with sawtooth indentations (see drawing). Beneath the rail is a hard rubber pad to absorb vibrations. Over the years the concrete ties gradually expand and contract. Temperature changes, residual curing of the concrete itself and the passage of trains gradually force the rails out of gauge; or, more accurately, these forces cause the ties to "stretch" somewhat and thus the gauge changes. Re-gauging is thus required. Off hand I don't know the frequency of this operation but my guess is that it isn't as frequent as it would be with conventional wooden ties and spikes. Instead of the complex procedure required with wooden ties, this system allows a crew to merely loosen the tie-down bolts on each tie and, using a rail mounted crane, lift the rail slightly and slide it over a hair to the next notch. Then tighten down the bolts. Not only is the procedure simpler but it lends itself to a more complete application of mechanical rather than human energy simply because the concrete tie to steel rail connection is inherently more precise than that of wooden tie and steel rail.

Throughout the world there are numerous variations of this scheme — the concrete tie with rubber pad and adjustable steel plates. Plus there is another intriguing idea which affects the same problem. Very basically in both a concrete and wooden tie the forces applied by moving train wheels on the rails causes a torsional load situation to be set-up in the rail itself. J. Keith explains this as simply a lateral load, that is, one that causes the rail to move sideways towards the outside of a curve.


PRIMARY LOAD
CHANGE AS RADIUS OF CURVE/CENTRIFUGAL FORCE INCREASES
SECONDARY LOAD CAUSED BY TENDENCY OF CONE SHAPED WHEEL TO SLIDE TO J. INSIDE OF RAIL
TORSIONAL LOAD ON RAIL
SPIKES
WOODEN TIE
UPWARD PULL ON SPIKE

That is an accurate explanation so far as it goes, but a more precise definition is, of course, much more complex (see drawing). As the drawing shows, the torsional/lateral loads occur in straight sections as well as curved, though in the former the measure of the force is generally only a function of train weight/wheel form-dynamics rather than speed and thus centrifugal force. Now, given that the steel spikes/tie plate to tie tends to be a rigid connection (or the bolts/tie plate to concrete tie), then this torsional load is transferred to the spike head as an upward force tending to pull the spike out of its hole; a movement that, in a sense, functions as a torsional shock absorption process. Thus the section gang's function is to not only adjust the rail back into gauge after it has creeped outwards but to restore this rigid connection by re-spiking the rails. In addition to the torsional loads and the resultant loss of accurate gauge and rigid connection, all the forces combined act to stretch and otherwise distort the tie itself. And wood, unlike steel, does not rebound with quite the same elasticity. Both materials will eventually fatigue from the constant pounding and bending, but steel tends to be "springier" and does not record the forces in the form of physical changes — shape, grain structure etc. — as much as wood does. Now, some unsung hero at some point over twenty years ago sat down and studied all these interactions and came up with a device known as a *railclip*. It comes in a variety of forms from many different manufacturers for both freight and passenger applications on all kinds of railways, but basically it is nothing more than a curled piece of steel rod or bar stock that is either bolted into a concrete tie or driven, spike-like, into a wooden tie. Its very form and springiness allows it to function like a shock absorber; resisting the torsional upthrusting effect as trains pass over the rail while also giving in to the force and thus minimizing the transferrence of the force into the wood or concrete tie. And, of course, minimizing the wear on the tie by short-circuiting the forces that would otherwise be transferred to the tie. I love such apparently innocent little inventions. So often they demonstrate a truly elegant perception of the essence of a problem. . . .

The buried tie design I'm proposing is a technological response to a number of problems having to do with the movement of trains on a track. As J. Keith explains, the ballast beneath a conventional track functions both as a support and drainage medium, while it simultaneously helps absorb shocks and vibration. All I am suggesting is a more precise "fit" between track and land, analogous to building foundations that by their design acknowledge a wide variety of soil and sub-surface geological conditions. The construction process: a trench is dug, topsoil removed to one side, crushed rock of varying sizes is laid with respect to underground drainage patterns and/or watertable, precast concrete ties with raised piers (heights varying according to site) are laid, rails are bolted down and gauged, ballast is adjusted and track leveled, and finally the topsoil is replaced and reseeded. The latter could be either landscaped with tough plants such as iceplants used along freeways or could be allowed to grow wild. Operational objectives/potentials: the sheer mass of ballast with topsoil would act to absorb vibrations and stabilize the position of the track as a unit. Grass root systems would tend to absorb rainwater like a sponge. There is also a tendency for water to not only percolate downward but, after a substantial rain or snowfall, to pool on the surface (if nearly flat) or run-off without further penetration into the soil. Contemporary building foundation design, particularly as it is practiced on high rise buildings using "floating" foundations on soft soils or rock, is a very highly sophisticated science that commonly deals with the realities of sub-surface water. I have no doubt that the application of many building foundation practices could not only solve the drainage problem but prevent any serious or rapid corrosion/erosion of the buried concrete tie. For example, practically every building in the United States — for that matter the world — that uses a concrete pier or peripheral foundation made of concrete utilizes various forms of watersealants, vapor barriers and drainage walls to prevent damage to underground concrete structure. And each is a specific response to a specific site. In other words, it's easy.

Back to track/train dynamics. J. Keith is indeed correct in his description of how track depresses as trains pass over. But this action is not necessarily an intentional or desirable event. What is often happening is that the track — as a unit of ties and rail — is rising up and down within the ballast matrix not in response to specific shocks generated by components of a given train but by the presence of the train itself (see drawing). By contrast watching a train pass over a section of new track reveals far less subsidence of the track and a much more fixed relationship between track and ballast. The ties give a little, as any piece of wood might under such intense loading, and the track as a whole depresses as much as an inch into the ballast. On more worn track the depression I've observed is on the order of 1 - 4 inches, with the track bent down like dough under a roller. With each passing train this impression continues until the track is so loose in the ballast that it easily creeps in response to expansion/contraction loads imposed by heating and cooling rail, resulting in rail like bent wire. So, this downward movement represents a gradual tendency for the track and the ballast to respond in *different* ways to the load of a passing train; the ballast being a static mass and the track becoming a "live" load on the ballast as a train passes over it. Optimally the design of track and roadbed should be such that all together they function as a unit, in synch, to transfer rolling loads to the ground. But of course optimal conditions do not exist. However, concrete ties, particularly those used on rapid transit systems, tend to solve this problem much more effectively. The combination of rubber cushions and/or railclips act to eliminate much of the vibrational and torsional loads *before* they are transferred to the roadbed — while also acknowledging, by design, that these loads exist and are different from that of the train's weight.

I suspect there is another factor in operation here. U.S. railroads have for three decades tended to opt for longer trains, higher loads per car and often heavier locomotives. Although the vagaries of proving that this has had a negative effect on track maintenance are so complex as to be almost unknowable, my sense is that in an effort to extract maximum profits out of a very expensive capital investment — the track — the railroads have pushed the loadings to the limit. . . .

Plants surrounding the proposed track: they would help stabilize the topsoil, aid in drainage, allow the surface biotic communities to live on without a total interruption in their continuity and improve visual qualities while reducing sound dispersal. Admittedly there is the potential of fire, particularly in the dry grasslands of the western U.S. There is also the deadening effect of dropped oil and grease from the wheels and motors. To solve both those problems, as well as improve train aerodynamics, the equipment I've designed would include complete underbody paneling, including pans under the trucks. Currently I'm working on a body design, for both freight and passenger equipment, that would include this feature as a structural element. This would drastically reduce the potential of fire, wrecks caused by dropped/broken mechanical components and damage to the train's mechanical components from derailments, obstructions on the tracks, and snow and ice. . . .

Just as I am implying an intentionally better fit between track, train and land, so also am I implying a better relationship between tools and the people that work them. In other words, track maintenance as it is now practiced in the United States is indeed one of the worst jobs there is, analogous to factory conditions in the late 19th century. In other parts of the world, most notably Europe and Japan, track maintenance machinery as well as the track design itself is often much more sophisticated in terms of the relationship between worker and task. . . .

Sincerely,

Christopher C. Swan
Nevada City, California

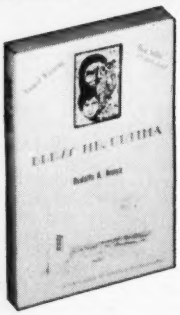
Box 428, Sausalito, CA 94965

Community

Bless Me, Ultima

It's hard to know why this novel never found its way into the pages of the **Whole Earth Catalog/Epilog** *or* **CQ.** *It is beautifully and passionately written. Like the first chapter from* **Portrait of An Artist.** *A child's eye. To some, it is the best known and loved novel of the Chicano experience. To others, it is the portrait of the powerful llano of northern Mexico and southern New Mexico. Finally, for me, it is the magic of Garcia Lorca: a young boy entranced by Ultima, an old woman who some believe to be a bruja, a possessor of Nature's powers, its plants, its owl talk, its dangerous winds.*

—Peter Warshall
[Suggested by Carol Turner]



Bless Me, Ultima
Rudolfo A. Anaya
1972; 248 pp.

$3.75 postpaid from:
Tonatiuh International, Inc.
2150 Shattuck Avenue
Berkeley, CA 94704
or Whole Earth
Household Store

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Ultima came to stay with us the summer I was almost seven. When she came the beauty of the llano unfolded before my eyes, and the gurgling waters of the river sang to the hum of the turning earth. The magical time of childhood stood still, and the pulse of the living earth pressed its mystery into my living blood. She took my hand, and the silent, magic powers she possessed made beauty from the raw, sun-baked llano, the green river valley, and the blue bowl which was the white sun's home. My bare feet felt the throbbing earth and my body trembled with excitement. Time stood still, and it shared with me all that had been, and all that was to come. . .

The Milagro Beanfield War

This comic novel provides a delightful introduction to the culture and recent history of Northern New Mexcio. The Spanish residents of the village of Milagro — proud heirs to a poor, resilient, land-based life that is much older than the U.S. of A., meet the challenge of the money-based Anglo economic invasion. At issue is a dam and conservancy district, true-life facts in a region where irrigation water is lifeblood and tax assessments drive farmers with little cash flow off their land and annihilate an agrarian culture.

Nichols has a keen eye for the comic insanity that underlies daily life. His novel is cheap transportation to a wonderful place.

—Richard Nilsen

The Milagro Beanfield War
John Nichols
1974; 629 pp.

$2.95 postpaid from:
Ballantine Books
455 Hahn Road
Westminster, MD 21157
or Whole Earth
Household Store

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"I wanna speak." Joe's brother Cristóbal said. "I nominate my brother José to be president of the Milagro Land and Water Protection Association."

Joe leaped up. "Oh no you don't, not me! I ain't no president!"

"You're the one with the beanfield!" Cristóbal shouted. "You started all this! If the state chotas stick a bullet in my ear, it's because of your pinche beanfield!"

"Bullshit! I didn't start nothing! / didn't call for this meeting! / didn't ask for nobody's help with my beanfield! What am I, crazy to ask for help from mental retards like you?"

"It's because he won't ask nobody to help him that he endangers us all!" Fred Quintana said.

Joe spluttered: "Oh Jesus Christ. If that's the way it's gonna be, as soon as this meeting is over I'm going to start up my tractor and drive it to the west side and plow up that beanfield and get all you people off my back!"

"You do, Jose," his wife Nancy threatened, "and I'll shoot you! I'll put ant poison in your enchiladas!"

Low Rider

Against the backdrop of megalithic American Media, it is a pleasure to encounter journals seeking to serve specific communities. While their quality might be uneven, these regional magazines are about the liveliest reading in the states. **Low Rider** *is by and for low riders — a lifestyle difficult to explain outside of the barrios of the Southwest. Its common denominator, as in a lot of American life, is the car. College professors drive Volvos, rednecks love trucks, and some folks have Chevys.* **Low Rider** *is an attempt at community. Low and Slow is the way to go.*

—Rafael Diaz Guerrero

Low Rider
Sonny Madrid, Editor

$15 /year (12 issues)
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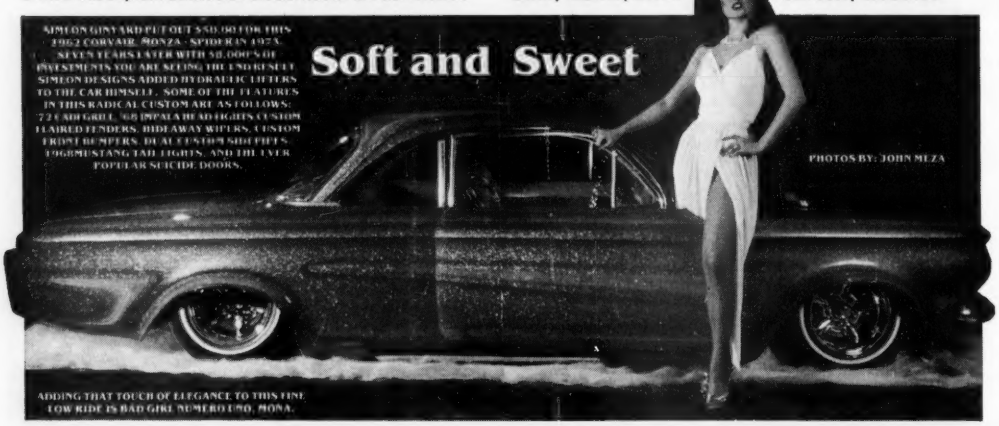


KATHLEEN O'NEILL

Some Peculiarities of the Cat, Harley

by Tim Jennings

KATHLEEN O'NEILL

Harley's Balls

HARLEY'S BALLS never descended, which is lucky for them. At one point, if we could have seen them, we would have had them cut off. We had just moved into a house whose backyard was a main feline corridor, and Harley, then a dewy yearling, was compelled to escort an apparently endless succession of neighborhood Toms laboriously around the perimeter, screeching and striking and biting to the point where we had paid over $75 in vet bills, and the top of his head was one vast compound crackling scab. But, like the executioner faced with the Cheshire Cat, the vet was stymied: there were no balls in view, and though he could have performed a $75 exploratory operation, he wouldn't guarantee that he'd find anything, or if he did and removed them, that it would make a bit of difference. Harley developed an imaginative style of fighting, an excellent set of antibodies, and the engagingly warped personality of a maturely functioning tomcat. For us, it's great: though he'll back up and wiggle his tail, plainly under the impression that he's spraying disgusting tomcat smell, he remains scentless. An evolutionary dead end, of course; mammalian fertility requires external balls. Unless . . .

Domestication does odd things to evolution. I've known several female cats from the same genepool as Harley that would remain in noisy embarassing heat until impregnated, no matter how long they were kept indoors. And Harley does fuck; we've seen him. And there have been some suspicious looking kittens. A gene for invisible balls and scentless spray would be greatly favored in today's scalpel-happy society. Perhaps they are retractable, and descend only at the critical point of coitus . . . but this is irresponsible speculation. Let us return to hard facts.

Harley's Spiritual Development

THOUGH RATHER slightly built, Harley is one bad dude: if he were human, he would have tattoos and hang out in waterfront bars getting into fights. When we took him in as a kitten, we had three other cats; within a year, they'd had enough and split. Later, to his horror, we got a dog, Ida. I was working at a mental hospital on a behavior-modification ward at the time, and I was fascinated to watch the cat's ruthless training methods. Negative reinforcement was a blow from a prickly fist. Positive reinforcement – a rare treat – was to allow the pup to smell his asshole, briefly. Harley began to see Ida's potential usefulness when the dog started helping him chase cats. (Harley doesn't like cats.) The depth of the dog's training became appallingly clear when Ida's dearest friend from infancy, a motherly German shepherd named Frieda, came to stay with us for a few months. Frieda proved untrainable. Though good-natured enough, she was too big and experienced and thick-skinned to take the cat seriously. Worse: she had been living with a squishy cat, who had allowed her to chew him all over, gently, leaving him sticky with spit. She wanted to chew on Harley. He was welcome to chew back – Frieda and Ida chewed on each other by the hour. This was not Harley's idea of a good time.

One night just before dinner, the three animals got themselves locked into some complicated confrontatory stance where none of them felt as though they could move without losing: they stood stiffly, with their tails and ears at significant angles and lightning bolts issuing from their foreheads. The tension grew until Ida couldn't stand it any longer: with a crazed, pleading look she ran over to Frieda and bit her below the eye. Frieda yelped and ran into the living room to weep. Harley stood stiffly, twitching his whiskers; he allowed Ida to sniff his ass for a moment, then turned and struck her. It was very gothic.

more→

Harley's Trick

HARLEY ENJOYS riding around on a friendly shoulder. Our perception is that we have trained him to do this by rewarding him with cheese; we suspect his perception of being that he knows how to cheese certain humans, as one may milk a cow. (He's passionate about cheese and eggs. The sound of a gently squeezed styrofoam egg carton will bring him rocketing down from the third floor.) If he's feeling mellow, he doesn't even dig his claws in, much.

Early in his career we went off for a couple of months, leaving him in the care of the two Englishmen to whom we were subletting the house. Matters were rushed enough that we left money instead of the cat-food the money was supposed to buy. From the elliptical and somewhat bitter comments of the younger Englishman upon our return, and from certain habits the cat had picked up, I reconstruct as follows.

The two Englishmen need the money to buy groceries: the cat can catch mice, maybe they'll feed him scraps from time to time. A day passes without The Cat's Dinner. The cat stands on the shelf where he's used to being fed, and hollers and shows his gums, all to no avail. Fuck you, cat, catch mice, I'm going to make myself a cheese omelette. The refrigerator is next to the cat's perch; as the door opens, the cat stands on his hind legs and waves his forepaws in the air. The Englishman ignores him, removes three eggs from the styrofoam carton. The cat launches himself onto the Englishman's bare back, and digs his claws in. The Englishman squawks and drops the eggs. The cat flows to the floor, where he devours the eggs, growling. Blackout. Next day: same time, same place. The Englishman opens the refrigerator. The cat materializes and looks ominous. The Englishman breaks an egg into the cat's bowl.

Harley's Parasites

A FEW WINTERS AGO, Phyllis and our friend Jane suddenly began oo-ing and ah-ing about Harley's asshole, or more precisely over a tiny white wriggler about the size and shape of an undernourished pumpkin seed emerging therefrom. Both women are interested in the study of parasites; Jane has a master's degree in the subject. They hauled down Jane's old text – Thomas Cheng's **Biology of Animal Parasites** – and looked the creature up. It was an egg-bearing end-segment of *Diplidium caninum*, the standard dog-and-cat tapeworm. The worm itself was attached to Harley's large intestine by means of a tiny burr-like unit called a rubellum; the rest formed an assembly-line of segments, each starting just below the rubellum and growing larger and more complicated as it moved away. Each segment began life as nothing in particular, developed male sex organs and released sperm, traveled further down the line and developed ovaries which were promptly fertilized by the boys up the way. By the time it reached the end of the line, detached, swam down to the anus, and presented itself to our admiring if somewhat disgusted gaze, our wriggler was an envelope stuffed with microscopic packets, each containing one to forty embryonic rubella. Within a couple of hours, the white wormy envelope would disappear, leaving the packets. Though invisible to us, the packets would look like an irresistible snack to any dog-and-cat louse or flea larvae that might come upon them.

As any dedicated veteran of the Flea Invasion knows, flea larvae live wherever their host sleeps, and feed on the bloody shit dropped by the adult fleas. It is the omnipresence of larvae in rugs, cracks between the floorboards, etc. that makes fleas so hard to get rid of; you can kill all your dog's fleas, and two weeks later he'll be scratching again. (It's only since the invention of the vacuum cleaner that human-specific fleas – much nastier to us than the pet-specific ones – have ceased to be almost universally endemic.)

Now here comes the interesting part. This curious association of appallingly degenerate flatworms (as Jane described the tapeworm to me) was almost certainly doing Harley no harm. It wasn't a bloodsucker; it just hung there in the gut, absorbing a modicum of Harley's bountiful supply of intestinal sludge. But the eggs *killed ninety percent of the fleas* misguided enough to eat them. Most of the fleas would die as larvae, but the eggs would continue to kill through all stages of flea growth. Finally a dog or cat would crunch down on some sick adult flea, and a new colony would begin.

So there was no question but that the worm was a flea parasite, but – laying aside our strong and often justified anti-worm prejudices – could we say that it was a *cat* parasite? Wouldn't it be fairer to call it a symbiote? Now that we thought about it, we were unusually flea free: there were some, but not enough to be bothersome, and many fewer than in previous years. And in that case, did it make sense to worm Harley?

We couldn't just do it to be on the safe side. Worming is trickier with tapeworms than with

roundworms because the former's body chemistry has coevolved to resemble its host's very closely; any poison we could give the worm would also be poison to the cat. (Roundworms, conceivably less coevolved, are alien enough to make their hosts very sick, and in turn are susceptible to poisons which leave their hosts relatively undisturbed.) Harley looked and acted perfectly healthy; why should we walk the fine line between sparing the worm and harming the cat?

We double-checked for possible bad effects the worm might cause. While Cheng assumed that the worm was pathological, the only bad news he could come up with was an occasional dog that developed so many colonies that its intestines became irritated by all the microscopic hook-fasteners on the rubella. Harley showed no signs of having an irritated intestine; furthermore, Jane said that a healthy tapeworm discourages new worms from attaching. If we were to succeed in killing his current worm, Harley could end up with more irritating attachments than he started out with.

Diplidium caninum is very thin and less than a foot long; there's plenty of room for it in a cat's yards of intestine. The amount of food the worm siphons off is paltry. The worm's only drawback seemed to be the occasional appearance of the white wrigglers as they exited. This was unaesthetic, but hardly unbearable. We were all still prejudiced enough to draw the line at having a worm in our *own* guts, but that was unlikely to happen. The fleas could not spread the worm by biting – they had to be swallowed. As long as we didn't allow the dog to lick inside our mouths right after it chewed up a flea, we would remain wormfree. Neither Jane's dog nor Harley were wearing flea collars, yet fleas were not a problem. In contrast, the group home for which I taught school carefully wormed its pets, and used many kinds of flea poisons, but still remained badly flea infested. We decided to let the poor worm alone.

That was four years ago. Harley seems fine. A little while ago he looked sick and vomited roundworms. We administered roundworm medicine, and now he looks fine again. He's still depositing segments full of *Diplidium caninum* eggs, so the tapeworm's fine, too. Two years ago we moved to an apartment in the village, half of a big house. Our neighbors have a flea problem; we don't. This is our first consecutive four year period without a major flea battle.

Thank you Harley. Thank you, Harley's worm. ■

Compulsive's Romance

1) Saniflush the bowl
2) Reglaze breakfast rolls.
3) Polish my class ring
4) Quantify the *I Ching*.
5) Prune bonsai trees
6) Dust wings of bees.
7) Clean the broccoli
8) Syllabicate Thermopylae.
9) Count kiwis at zoo
10) Map out the boogaloo.
11) Laminate all essentials
12) Check the janitor's credentials.
13) Train cows to pasturize
14) Gauge the beauty of your eyes.
15) Punctuate *Ulysses*
16) Recite . . .
Re . . .

Check that.

1) Gauge the beauty of your eyes.
1) Gauge the beauty of your eyes.
1) Gauge the beauty of your eyes.
1) Gauge the beauty of your eyes.
1) Gauge the beauty of your eyes.

Dunno a damned thing about him. His stationery says it's from the English Department at UCLA. –SB

Big Girls Now, I Gave My Poems the Boot

and after an intense though abbreviated grief,
they're up and about –
reading travel brochures,
studying voice,
jogging.

tonight they're going to a single's bar,
Brazilian colors flying –
orange skirts fluttering across slim ankles.

sidle up to them.
ask one to dance.
praise her rhythm.

and after an intense though abbreviated conversation,
she will slide onto your tongue
and you will speak in music –
she will have found her page, her concert:
sugar daddies she would die without.

Zen Waistline

Caught an Asian monk
on an exercycle:

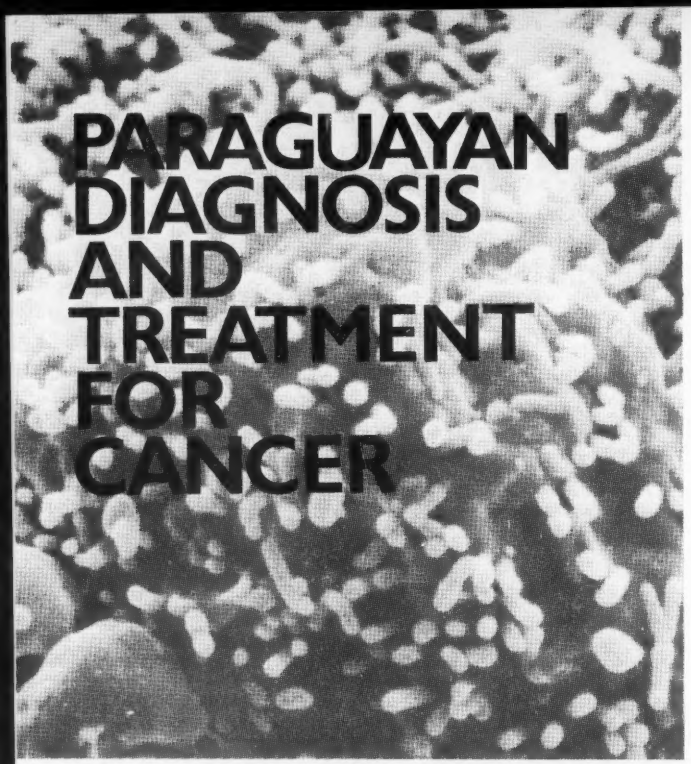
"Avoirdupois karma –
laughing Buddha
sends me his belly.
Wild rice.
Overloaded yang.
Maya. Maya.

But Satori! Nirvana!
pump, pump, pump."

Three Rightsize Poems

by Mike Rose

PARAGUAYAN DIAGNOSIS AND TREATMENT FOR CANCER



Cancer cells photographed with an electron microscope. (From Science Dimension, 1978/6, National Research Council Canada, Ontario.)

Is it irresponsible or responsible publishing to print the formula for an alleged cure for cancer? I guess we'll try it and find out. Call it curious publishing. –SB

I recently returned from Paraguay where I was working on the Itaipu dam and came across a very interesting group of investigators including biochemists, surgeons and chemists. These people have developed a technique for cancer detection which they inform me detects neoplasm even before it can be observed clinically by the usual techniques.

I tried it on a group of 100 urine samples taken at random in the pathology lab at Providence hospital here and got the following:

Diagnostic sensitivity	80%
Diagnostic specificity	87%
Predictive value of positive test	42%
Predictive value of negative test	97%
Efficiency of the test	87%

The Paraguayan researchers have developed a "HAPTEN LIPOID VACCINE" which when injected in cancer patients either shrinks tumors and effects the disappearance of the clinical signs of cancer, or attains a static condition, and in all cases reduces pain except for mechanical stimulation.

Please find enclosed a copy of one of their publications, an English translation and the method for preparing H.L. Maybe some of your readers could take advantage of this.

John Fitzpatrick
Silver Spring, Maryland

A New Technique for the Detection of Cancer by Fluorescence in Urine Using Ultraviolet Light

*By Dra. Virginia M. de Zanotti-Cavazzoni; Prof. Dr. Juan Carlos Zanotti-Cavazzoni; Prof. Dr. Alberto Miguel; Dra. Juana Malvetti M.**

Description of the Technique

A. To 4 cc of urine add 8 cc of chloroform. Mix well and centrifuge at 1500 rpm (10 cm radius). Discard the chloroform, to the remaining urine add 8 cc of ether, mix well and centrifuge. The ethereal portion is exposed to the Wood lamp and its color is noted.

B. The ether is evaporated and that which remains is taken up in 4 cc of a saline solution whose composition is 0.9% NaCl and 0.1% of sodium barbital. Again it is exposed to the Wood's lamp and its color is noted. If in both cases a greenish-blue color is noted or a bluish-green and sometimes light blue with a fluorescent aspect, the diagnosis is suspicion of cancer. It is important that the two observations show fluorescence since in some allergic states fluorescence can be observed in the ethereal solution but not in the saline solution; the samples of urine should be obtained outside of the time of allergic asthmatic crisis. In case the test gives positive results it is advisable to repeat the test two or three times within fifteen days for a confirmation of the diagnosis. This test gives a negative result in some incipient cancers of variable topography, as for example the lung, in post-operatives and in all cases of auto-antigen therapy.

In the cases of renal cancer, in order to determine the affected side, urine is obtained by a bi-lateral catheter, practicing the technique above in both samples.

Casuistics:

Examinations: 627
Cancers discovered: 158
Cancers proven: 152

It should be noted that the high percentage of cancers is due to the fact that the patients come from the Central Military Hospital and the Clinical Hospital of Asuncion with a diagnosis or suspicion of cancer. In the casuistics are included 51 healthy persons selected as controls.

Original title published in Spanish,
Nueva Tecnica De Deteccion Del Cancer En Orina Observada Con Luz Ultravioleta
Rev. de la Soc. Paraguaya de Medicina Militar, Num. 213, Marzo 1978

Bibliografia:

Miquel A. et al, La Prueba de los Leucocitos y la Fluorescencia en las oncopatias vesicales malignas. VI Congreso de la Confed. Argentina de Urologia, Mendoza 1974 Zanotti-Cavazzoni J.C. et al; Preuba de la Fluoescencia de las Substancias Extraisas de la Sangre y de Otros Liquidos Organicas. Rev. de la Soc. Paraguaya de Medicina Militar, No 206. 9-19. X-XII-75.

Zanotti-Cavazzoni J.C. et al; Analisis fisico-quimico para el diagnostico clinico y preclinico. Rev. del Circulo Paraguayo de Medicos. Vol. XV-3 3-42 1-XII-75.

*Present address:
Centro de Analtica LA ESPERANZA
Manuel Dominguez 1833
e/Gral. Aquino y Mayor Fleitas
ASUNCION, PARAGUAY

Preparation of Hapten Lipoid Vaccine

In a 100 cc sterilized vial with rubber stopper, freeze 20 cc of the patient's heparinized venous blood. Use 0.2 to 0.4 ml of heparin for a 20 cc blood sample. Freeze between -5° C and -10° C. Upon thawing, mix thoroughly but gently so as not to form a gel, with 40 cc of chloroform. After 5 to 10 hours carefully decant the chloroform by perforating the crust of red cells on top of the chloroform with a sterile glass rod in two or three points. Then add 40 cc of ether and with the sterile glass rod thoroughly mix and break up all of the clumps of red cells. Replace rubber stopper. After several hours the mixture separates and the ether is carefully decanted. It may be necessary to do this twice if some red cells pass over into the receiving vial on the first pouring. Place the vial containing the ether in a warm bath of water, approx. 38° C with the rubber stopper loosely on top. Evaporation of the ether usually requires 12 to 24 hours. If urgent use a vacuum pump. Once the ether has evaporated from the vial, a thin film will be observed on the sides and in the bottom of the bottle one or two drops of an oil-like substance. This is then carefully taken up with one to one and a half cc of ether and brought to a volume of 20 cc with isotonic saline solution. It is recommended that this be kept in a refrigerator, about 5° C, and is considered to have a useful life of 90 days in storage. Upon using, shake well.

The hapten lipoid (H.L.) is injected intramuscularly but never directly into a tumor itself since such procedure has been known to produce rapid lysis of tumor cells which could overtax the patients excretory system. It has been used on inoperable cancer patients; 8 to 10 days prior to and following surgery and radiation therapy.

Recommended dosage: (Ref. 1).
For cancer and pain relief (sometimes with estrogen): 2.0 cc daily.
For immunity: 0.2 cc every other day.

In the course of the development and preparation of H.L. over the last 20 years certain interesting observations have been made but not studied in detail.

1) It appears that the evaporation time of the ether depends on the patient. With cancer patients the evaporation is more rapid than with those suffering from heart or liver diseases.

2) The blood of patients who suffer from heart disease affecting the heart muscles or valves does not freeze as rapidly or readily in the range -5° to -10° C.

3) With patients who suffer from anemia, a thin reddish fluid floats on top of the encrusted red cells with the chloroform.

4) The ethereal portion has a slightly yellowish color when the patient suffers from an hepatic disorder.

5) To date, end of 1979, this preparation has been used on more than 12,000 patients and has never produced an infection. Casuistics can be found in Ref. 2.

The results of the use of H.L. can be summarized as follows:

a) Disappearance of the cancer clinically, or
b) Attainment of a static condition, or
c) The cancer progresses but without pain due to toxicity except mechanical stimulation.

References:
1) A. Miquel, N. Solalinde M. "Immunidad y Cancer", Rev. Soc. Paraguaya de Medicina Militar, Num. 204, Agosto-Set.– Oct. 1973

2) Juan C. Zanotti-Cavazzoni et al, "Analisis fisico-quimico para el diagnostico clinico y preclinico, Rev. del Circulo Paraguayo de Medicos. Vol. XV. 33-42; I-XII 1975.

See also: VII Congreso Brasileiro de Analisis Clinicos-Sao Paulo, 13 al 17 de Agosto de 1978. ■

Punk Medicine

An aggressive challenge to the "wholistic medicine" mentality (which is nothing more than some people telling other people what's good for them). Punk Medicine gives the patients what they want, when they want it. Try getting your iridologist out of bed at 3:00 A.M. Punk Medicine acknowledges that medicine is a co-addiction of patient and practitioner. Neither ever gets enough. Under a banner reading "No Slobs, No Jobs", punked physicians operate a provisional wing of the AMA. Confining themselves to the treatment of a given part of the body at any given time, they deny the existence of the spiritual or mental aspect to the routine human's existence. The patient recognizing this barely suppressed hostility on behalf of his doctor is inclined to stay healthy and ignore trivial complaints. Punk Medicine regards health as a commodity, bought and sold like so many sow belly futures.

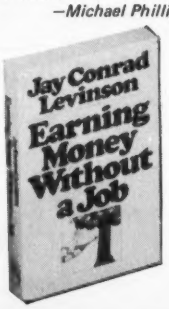
—Kirk Hogan
Allenspark, Colorado

Earning Money Without a Job

Many people want to leave their traditional 40 hr. a week jobs. For most of them, starting a business or buying one are the alternatives they dream of. Unfortunately the skill to run a business is very scarce and most people fail. The real answer to being your own boss is many small jobs. This book is the best guide available.

—Michael Phillips

Earning Money Without a Job
Jay Conrad Levinson
1979; 204 pp.
$4.95 postpaid from:
Holt, Rinehart and Winston
383 Madison Avenue
NewYork, NY 10017
or Whole Earth Household Store



Box 428, Sausalito, CA 94965

•

I have been without a job for over seven years, yet I never have been without work. I have earned considerably more money without a job than I did with a job, yet I rarely work more than three days a week. I have tasted freedom and quickly grew addicted to its pleasures.

•

Wash a window
Invest in a long-handled squeegee, a pail and a good glass cleaner. *Voila!* You are in the window-cleaning business. Go from store to store offering to wash windows and you'll be amazed at how many acceptances you get. Print up business cards and get ready for a lot of repeat business.

Be a homebody
Be homey. But not in your own home – in someone else's. Offer to perform any of the work necessary in the home; oven cleaning, floor washing, wall washing, dish-washing, vacuuming, ironing, everything. You can pick the days you work, and your capital investment is minimal, since the home probably will have all the necessary equipment.

New Age Doctrine is Out To Lunch on Three Issues:

•Villages
•Recycling
•Democracy

by Michael Phillips and Robert Gnaizda

It is easy to criticize excessive consumption, competitive marketplace values, and dollar-dominated political institutions and multinational corporations.

We would like to suggest that a similar but more courageous critical eye be applied to peer views on three core issues affecting our planet – villages, recycling and democracy.

Cities versus Villages

As energy and material resources become relatively more scarce, cities will grow larger and denser, while villages, towns and suburbs will atrophy and become even more precarious luxuries than they are today.

The reason is that daily life and business are more efficient, and require fewer resources the closer people are to each other. That is why cities exist, and why they have grown steadily for seven thousand years. It is why towns and villages come and go as quarries run out, highways move, rivers change paths, and industries adopt new technologies.

There are three ways to confirm this fact about the future of cities yourself. Use a simple physical example, look at some comparable historic examples, and look at current trends that have developed since the 1974 oil shortage.

1. Compare the material resource cost of housing 50 people (15 families) in a five-story apartment building at 710 Bush Street, in San Francisco, with the cost of housing the same families in 15 houses even in energy-conservation conscious Davis, a moderate-sized university town near San Francisco.

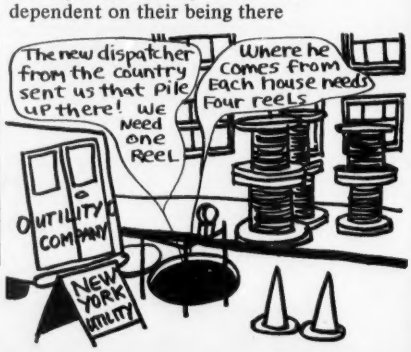
The ratio of the usage of materials by a village to that of a city is worse than 3:1. The ratio of energy consumption, including travel, is still worse. The personal experience of anyone who has lived in a community can confirm this village to dense city ratio. Twelve people living together can live on the same income as three people each living separately. The synergy of compact space, shared resources, and close personal contact is felt on a human scale, as well as an economic one.

2. The history of city growth reveals the same information. Density is a by-product of scarce resources. Cities that were built in the last century, when resources were relatively scarce, and cities that have high costs because they are surrounded by water, tend to be dense. Consider Manhattan, San Francisco, Hong Kong, Vancouver B.C., Kowloon, and the Old City of Stockholm, which are all dense island or peninsula cities, with major growth before the 20th century. Compare these to contemporary cities which were built during a period of cheap oil, such as Los Angeles, Tulsa, Sidney, Melbourne, Dallas, Phoenix, and Tel Aviv.

3. The strongest evidence that cities will grow and that towns, villages and suburbs will decline, as resources become relatively more scarce is the experience of the last six years in the U.S. Since the oil shortage and gas lines of 1974 cities have had a dramatic re-birth, with massive influxes of upper income people moving from suburbs to downtown areas. This so-called gentrification (gentry moving back) has resulted in the condominiumization of existing apartment buildings and hotels and the rapid construction of dense, town-house condos. There has been a simultaneous outflow of lower income families to the outermost suburbs, with an attendant racist reaction and a rise in the activity of the Ku Klux Klan.

The reason upper income people give for moving into the heart of the city is that their jobs are too dependent on their being there

Resources	City Apartments		Village Houses	
Copper pipe	2,000	ft.	10,000	ft.
Arable land	5,000	sq. ft.	200,000	sq. ft.
Roadway	1,000	sq. yds.	15,000	sq. yds.
Concrete	17,000	cu. yds.	9,000	cu yds.
Lumber	25,000	board ft.	1,200,000	board ft.
Utility pipes	450	ft.	2,500	ft.
Maintenance				
Daily postal delivery	12	ft.	3,000	ft.
Water for landscaping	500	gallons/day	35,000	gallons/day
B.T.U.s for all heating	5,000	/day	27,000	/day
Individual auto travel	25,000	miles/month	90,000	miles/month


The new dispatcher from the country sent us that pile up there! We need one REEL
Where he comes from Each house needs Four reels
UTILITY COMPANY
NEW YORK UTILITY

Both authors are activists, Phillips with Glide Memorial Church and Gnaizda with Public Advocates (both in San Francisco). –SB

to risk transportation delays and breakdowns. As transportation costs and problems increase, the highest paid members of our society will be in the dense downtown where they are the least affected. Europe, with its high oil prices, experienced gentrification of its cities in the late 1950's, much earlier than the U.S.

Denser cities will be the economic consequence of resource scarcity in the future. It is also the environmentally sound way to preserve our resources.

Recycling

Recycling and conservation are good, logical, and desirable ways to deal with resource scarcity. The trouble is that they are nearly trivial as a policy issue and, in terms of saving significant resources world wide, they are a travesty, allowing most people to ignore the serious, underlying issue of steadily rising incomes.

In personal terms, a simple calculation will show the relative unimportance of recycling/ conservation in comparison to rising income. Assume a household of three, two adults, one of whom works, with a gross annual income of $10,000. If they recycle all of their garbage into a garden, recycle all glass, aluminum, bi-metal and paper, cut their water, power and fuel use by 25 percent, the annual value of the resources they save maximum of $1,600. This is wonderful, but what do they do with the money they save? If they invest it or spend it, that money will be respent by many others, and the "others" will consume much more than is saved. To be effective in saving resources, we must reduce our income, not turn around and respend it.

More likely, they will do what the majority of households in the U.S. have done, and both adults will get a job, bringing their annual income up to $20,000. The following table shows the effect of an income rise on resource use.

Another way to look at it is that a massive conservation/recycling effort would save 15 percent of our current resource use if we all made a determined effort and were backed up with supportive legislation. Yet the U.S. resource use has increased by 15 percent just since 1974. All we can do with conservation/recycling is step back six years. Or stay level for the next six years. Once thorough conservation/recycling was achieved, we would again be increasing resource consumption by 25 to 35 percent every decade with the same social values that have produced that kind of resource consumption for the past 100 years.

As long as the value of "making a lot of money" is highly rated and widespread, we will continue to consume resources

ESTIMATED USAGE OF RESOURCES PER HOUSEHOLD IN THE UNITED STATES

	Usage per Household at $10,000/yr. income		Usage per Household at $20,000/yr income	
Electricity	2,170	kilowatts/month	4,025	killowatts/month
Petroleum	300	gallons/month	475	gallons/month
Timber	6	trees/year	8	trees/year
Water*	3,300	gallons/day	4,000	gallons/day
Fertilizer	106	pounds/month	136	pounds/month
Crab	4.4	pounds/year	5.5	pounds/year
Shrimp	5.8	pounds/year	8	pounds/year
Outboard motors	1	/every 9 households	1	/every 5 households
Asbestos	4	pounds/year	8.5	pounds/year
Lead	18	pounds/year	33	pounds/year

*including irrigation

Based on 1970 U.S. Census.

Calculations are based on 30 years of data from the U.S. Statistical Abstract. In a regression of $Y = a + bX$ where Y is GNP in constant dollars and X is quantities of physical resources "b" is assumed to be the "income effect" for each resource. Each "b" is used as a multiplier in the table of $20,000 households shown above. Table by Michael Phillips June 1977.

rapidly, regardless of how effective conservation/recycling programs are. When reducing income is socially important, resource consumption can be reduced or stabilized at current levels.

Worldwide, the same phenomenon is occurring. National incomes are rising very rapidly. The ten richest nations consume so much that their (our) increase in resource consumption in one year exceeds that of the whole rest of the world in five years. The big users of resources, you and me, must slow down dramatically or no worldwide conservation can be meaningful.

Democracy

Democracy is what this country was founded on, what several million men have died for in two world wars, what we impose on nations we defeat in wars (constitutions, elections, etc.), and what our peer group

suggests as the solution to the problems of big government, big labor, and big business, and nearly everything else. The universal solution found in all "new age" literature is more local self-governance, decentralized democracy. The reason that this is universally suggested is that we don't know of any other form of governance than what we call "democracy," which is really elected representation.

Elected representation, on any level, local self-government or the U.S. Congress, is a ludicrous farce that needs a drastic overhaul. The same people who want more democracy, when asked about the U.S. Congress in a Gallup poll, say overwhelmingly that their representatives are "crooks." People view local elected officials similarly; the occupation group that is given the lowest rating is that of elected representatives. The majority of Americans are so repulsed by the election process that they don't even register to vote. The people who do vote usually have to choose from relatively wealthy male professionals. When elections of local boards were held extensively during the War on Poverty, apathy and corruption were often the result.

The reason for this institutional failure is that people who are willing to "stand for election" are significantly unrepresentative. They are agressive, verbal, self-serving, needing of excessive attention, and are efficient in suppressing their feelings and emotions.

We need much more experimenting with our governance

The Ecological Future as Seen by our Peers

***Small villages scattered gently over the rural landscape. Lovely small homes with solar collectors, vegetable gardens, and scattered wind generators. Children playing in the front yard with adults riding bicycles to shop and many people operating businesses out of their home with computer consoles. Cities dying on the far horizon.**

***Recycling boxes are on every corner. Stores sell only returnable bottles, and garbage is carefully sorted for metals. Composting is a joyous daily activity for most families, and sewage systems provide additional soil supplements.**

***Government agencies, utilities, national businesses, and unions are governed on local and regional levels by councils of elected consumers, workers, and concerned environmentalists.**

Our Visions Help Create Our Future

In the Buck Rogers drawings of the 1920's and 1930's, cities had auto ramps weaving through the buildings, there were no old sections of town, and cars had tail fins. Some people were pictured driving single passenger flying platforms.

These visions became reality in the 1950's and 1960's. The ramps, called "freeways," were built at a rapid pace into and around the hearts of cities. They were stopped, in some cities, after their destruction of embarcaderos was visible and experienced. Whole sections of cities were demolished, mostly old immigrant and Black sections, and left as flat wastelands for 20 years. Tail fins were in vogue for six years, but served no function. The flying individual platforms were built at great cost, but were found to be unstable and uneconomic for either military or private purposes.

systems before we ask for more of the same. One alternative is to have random legislatures. With this approach, decision-making bodies are selected by lottery from all the people affected. It is truly representative.

Another alternative would be to modify our current election system by offering the voters a ballot choice of "none of the above." When a majority voted for "none", a new slate of candidates must be chosen.

Many traditional cultures, and some modern non-violence organizations, use pyramids of electors, with a rotation of elected positions, and use the consensus decision-making process.

Many forms are available when we seek them out; we need to experiment with them. ■

Re Elect
PLUMBERS LOCAL #1104
I think our Representatives in Congress and on the City Council are self-serving crooks!
REPRESENTATIVE

Positive Directions for an Ecological Future

1. *Make denser cities more desirable:* Build more Great parks, like New York's Central Park, San Francisco's Golden Gate Park, and Vancouver's Stanley Park. Increase the use of trees in cities, provide benches, public phones and public restrooms, encourage street vendors, put on street fairs, operate public transportation on tight schedules, decrease the number of autos downtown, and intensify efforts, far out of proportion to any prior attempts, to reduce crime and vandalism. One way would be to redirect our tax system toward, for example,

a) subsidies for renters proportional to area of dwelling;
b) punitive taxes on new gas-guzzlers such as 100% of purchase price; and
c) subsidize "Ma Bell" forms of communication and tax Pan American Airlines type communications.

2. *Help people to reduce their incomes:* Set up hot-lines to talk people out of spending; write more popular songs about simple living; hold public discussion of ways to buy less and develop social support systems to help people overcome the belief that they "need more money." Create Johnny Appleseed heroes of contemporary people, like Shali Parsons who lives well and joyfully with his son on less than $500 per month. Discourage inherited wealth through confiscatory taxes.

3. *Try new forms of governance:* Experiment with rotating representatives in your organization, and lottery selections of boards of directors in clubs and associations.

The 1960's Resemble the 1880's

We should be wary of the consequences of our 1960's drug/whole-food/feminist and antiwar-activist experiences. Our peers are beginning to seek a community of ideas and organize political institutions under the banner of "New Age Politics." The American Humanistic Psychological Association had a conference on this subject in February, and Mark Satin opened an office this year in Washington, D.C., to start a new political party. By the 1990's our peers will be passing laws and creating new governmental institutions.

The same thing happened in the late 1890's and 1900's, when the Progressive Party grew out of the social ferment of the 1880's. The Grange Movement, Unions, Anarchists, Suffragettes, Christian Scientists, Boston Yogis, Utopians, and Whole-Foods people became a political coalition as they grew older. They created: the Federal Reserve System, the Pure Food and Drug Act (F.D.A.), the Sherman and Clayton Act anti-trust laws, Grape Nuts, Prohibition, farm parity subsidies, elections through the initiative process in many states, Anti-Tammany Hall policies in local government, alien immigration laws, the Interstate Commerce Commission to control railroads, and Progressive Income Taxes. Prohibition grew from this movement and helped create a strong, popular F.B.I.

How much of this are we grateful for today?

Will our descendants in 2060 be as dissatisfied with our 1990 creations as many of us are now dissatisfied with the F.D.A., F.B.I., Department of Agriculture, Federal Reserve, and Railroad regulation, etc.? ■

LESBIAN INSEMINATION

by Susan Stern

The names are fictitious. Everything else is fact.

LILY JUMPED out of her van and charged up the steps to Gaea's flat, in a hurry as usual, clutching the precious brown paper bag. She rang the bell and waited impatiently for the answering buzz that would open the wrought iron gate. Sometimes she wondered what the neighbors thought if they noticed her going into Gaea's house, every other day for three days, every month for six months, with the brown paper bag. They probably thought it was some sort of drug deal. That made Lily laugh; because what she was doing was really so much more ordinary, and so much more revolutionary.

Lily is one of those women whose life is a relief map of our last 20 years. There was the marriage to get out of the house. There was LSD and "infidelity" but no orgasms. She came to San Francisco, and later she got a divorce. She became a midwife, and later she "came out" as a lesbian. It wasn't midwifery that brought her to Gaea's flat this afternoon, but it was related. Sometimes she jokingly referred to it as "the ultimate in pre-natal care."

Finally, Gaea rang her in. Lily was excited and breathless when she reached the top of the stairs. She held out the brown paper bag with a flourish:

"I think this is going to be the one."

"Well, I'll tell you, my body feels ready," said Gaea, "I've got 'fertile mucous' like you wouldn't believe." She towered over Lily; a tall, squarely built woman.

"Where's the syringe?"

"Right where you left it. How are you, Lily?"

Lily had already walked past her into the bedroom.

"I can't find it," she called. Gaea followed her in. She pointed to the top shelf of the bookcase. There was a small wooden carving of an African goddess, and next to it a Cara Mia artichoke jar containing a green plastic syringe.

"I'm in a rush as usual," said Lily. There was a regular lesbian baby boom in the making, and she was right at the center of it. A lot of women, of course, were finding sperm donors and inseminating themselves. Other women were going to doctors, but many doctors refused to inseminate lesbians or any single women for that matter. So a lot of women were finding their way to Lily. Not just Bay Area women but women driving in four or five hours from the country to get that sperm. Letters arrived asking for help from women in the Midwest, who were unable to find doctors to inseminate them. One U.S. servicewoman wrote from Germany. Could she be inseminated on her leave in San Francisco?

Obviously, there aren't any statistics on how many lesbians are inseminating, but Lily got the sense that the trend had started about three years ago and was growing. For a while she was inseminating ten women a month, and she knew of at least two other Bay Area women who were providing the same service.

"So I won't offer you any tea now," said Gaea, "I'll put in my diaphragm."

"I'll go wash my hands," said Lily.

Lily's excitement was contagious, but Gaea was reluctant to be stirred. The excitement only

We have carried a few gossip-type items in the past on the increasing occurrence of "oven-baster babies" – amateur artificial insemination in the San Francisco gay community. When Susan Stern volunteered to report in more depth on the practice, we said yes please. Susan researched and wrote "A Guide to Worrying Intelligently About Having a Baby," which appeared in **CQ** *No. 21 (Spring '79). She is managing editor of* **Synapse**, *the newspaper of the Health Science schools of the University of California, San Francisco.* –SB

ANDREW FLUEGELMAN

One of scores of such mothers around the San Francisco Bay Area, Lynn Mathison (real name) has a nice family under way with her one year old daughter Brook Lyn Mathison. The only thing unusual about Brook is the manner of her conception. Three of Lynn's gay male friends made a joint sperm donation and then waited attentively to see who the child would resemble. The other women in the house Brook shares cavorted around behind the camera to help with this first portrait of a family made by amateur artificial insemination. The root of the word "amateur" is "love."

When Gaea first decided to have her child, she considered sleeping with a male friend. But she rejected that idea. It would mean complicating and cultivating their relationship for the sole reason of having a baby. And Gaea didn't like the idea of having a relationship just to have a child. How many straight women did that, she wondered. How many women consciously or unconsciously got married because they wanted babies?

intensified the crash when it came. For six months Gaea had been trying to get pregnant and for months her hopes had been drowned in the familiar flow of menstrual blood.

It was an irony that Gaea could appreciate. In her ten-odd years of making love to men how many months had she spent willing that blood to come? When she was 22 she got pregnant. She got an abortion. There followed more years of wrestling with diaphragms slippery with contraceptive cream.

The funny thing was that for all those years, ever since she was a 16-year-old babysitter, she knew she wanted to have a child. She could imagine herself as a mother very clearly, even at 16 she knew she would make a great mother. But in her Brownie Starflash picture of the future there never seemed to be a man. That was a problem. Even at 16 Gaea knew where babies came from. They came from husbands, from nice families with in-laws and split-level homes. Either that or they came from some girl's mistake; some unfortunate girl who "got herself pregnant" in the back seat of some sedan.

But a year ago, when she was 33, Gaea had given up both those options. As it turned out, her 16-year-old vision wasn't so off-base. Gaea came out as a lesbian, or that's what they would say, technically. Gaea would say that she had always preferred women's company to men's.

Not that she hated men. On the contrary, when she first decided to have her child, she considered sleeping with a male friend. But she rejected that idea. It would mean complicating and cultivating their relationship for the sole reason of having a baby. And Gaea didn't like the idea of having a relationship just to have a child.

How many straight women did that? Gaea wondered. How many women consciously or unconsciously got married because they wanted babies?

Finally, she settled on artificial insemination. But she had to admit when a friend first mentioned the idea it turned her stomach. Artificial insemination? Wasn't that something they did to cows? It was so artificial . . . it was so . . . alone.

Maybe that was why she balked. Mom, America, and Apple Pie. Not only was it difficult to bring up a child alone, it seemed somehow immoral. Maybe that was it; bringing up a child alone would be a sin against the family.

Yet so many women are bringing up children alone. According to 1978 census data over six million American women are bringing up over 9.5 million children without men. And even when there were men involved, how many were the children's "real" fathers? Even the **New England Journal of Medicine** article had said: "undisclosed paternity as a result of artificial insemination by donor may be overshadowed by the amount of unknown paternity in the general population."

A few months back Gaea had been sick and had stopped inseminating for a while. She looked around. Who were mothers in this society? What were their qualifications? Mostly, it seems they get "qualified" by getting married. Again, Gaea decided she would make a fine mother. It was true, she would have preferred not to be going it alone. She too, wanted a "family," a steady mate. Indeed, most of the women she met at the groups for would-be lesbian mothers were in couples. She felt excluded, and yet . . . she wasn't going to latch on to some woman because she wanted a "family" for her child.

So here she was. A woman inseminating herself. There was no precedent for it. Oh yes, the myths were full of it, full of parthogenesis and virgin birth. Buddha and Quetzacoatl, Plato, Montezuma, and Ghenghis Khan all claimed to have been born of virgins, untouched even by male deities. And Christ. Well, there was a Father in that

Artificial insemination? Wasn't that something they did to cows? It was so artificial . . . it was so . . . alone.

story, but one could certainly call the insemination "artificial."

Oh yes, there were the myths, but in the reality of 1980 America there was a chance that "they" would want to take Gaea's baby away. All over the country, the courts were trying to take lesbians' children away. What would they do when they found out lesbians were getting pregnant on purpose? In the handful of states with artificial insemination laws on the books, there was never any reference to lesbians, or single mothers. Gaea clenched her teeth. I'm not having this baby so that it can be taken away, she said to herself.

Lily finished in the bathroom and returned to the bedroom. She closed the rose-colored curtains and put on the dim bedside lamp. Gaea went to her closet and put on her skirt, her only skirt, the faded, flowered skirt that had been her mother's.

Lily took the cold cream jar out of the brown paper bag. The sperm barely covered the bottom of the jar. She put the syringe in (without the needle) and sucked it up. Gaea was already lying on the bed, her knees bent, with the skirt pulled up around her waist. In the playground across the street, kids were laughing and shouting. The last afternoon sun made a white streak on the bare wooden floor.

Lily pulled down the edge of Gaea's diaphragm with her fingertip, inserted the syringe, and released its contents behind the diaphragm. Gaea lay still on her back. She couldn't feel the sperm going up her this time, as she had other times. She didn't think about the donor. What would she tell her child if she asked about it? "It was really very mechanical," she would tell her.

"Think fertile thoughts," said Lily. The two women smiled at each other. Lily always said that. It was her ritual. Conception, it was so loaded with meaning and yet so . . . simple, so quick, so nothing. Most heterosexuals, thought Lily, didn't even know when it happened.

Lily and Gaea chatted for a while, but Lily was anxious to be off, she had an interview that night with a prospective donor. They hugged, and Lily trotted down the steps into the dusk, into her van. What am I? Once again that question teased Lily as she warmed up the van. I am not the mother, I am not the father . . . if Gaea gets pregnant, I'll be as excited as all get out, but WHAT AM I? The inseminator? What an icy cold word. An expectant midwife? Perhaps.

Alone in her house Gaea considered masturbating. Some people said orgasms were conductive to conception. But she didn't feel like masturbating. She decided to call her lover. It had been "heartbreak hotel" in that department lately . . . but she had such a strong feeling this time, that this was it . . . somehow it made her want to be with her lover. In the past, they had sometimes made love around the time of insemination. Gaea remembered that one time, laying in bed afterwards, her lover had addressed her belly:

"Get on up there, you little spermatozoas," she had coached, "There's a beautiful little egg up there waiting just for you."

Sometimes Lily wondered how she had gotten into all this. But she knew. "It's a reproductive right, to get pregnant, just like abortion is," Lily would tell people, "I don't think it's just a privilege that heterosexual people alone should have, I think that's bullshit. A lot of heterosexual people get pregnant because they forget their method of birth control."

And Lily also thought that doctors charged too much money – $25 to $80 for an insemination. Lily only charges $15, and she prides herself on being both more thorough and more humane than the doctors. Lily's male donors, who are mostly gay, have to have a VD test and fill out a long medical history form, to weed out heavy drug, alcohol or cigarette users and those with genetic diseases. The form also elicits information on the donors' looks and aptitudes, so that women can choose among them.

Lily tests the prospective donor's sperm for fertility. The chosen donors then sign papers waiving any responsibility for or right to the child. Lily is the only one that knows both the mother's and donor's identity, and they are promised complete confidentiality. But Lily keeps records, and it is written into her contract that if, when the child is 18, s/he wants to find her/his father, Lily will provide his address, if he is willing.

All of this takes Lily a tremendous amount of time. Tonight, she has still another insemination, but this time in her own home. Rachael, the would-be mother and her lover Judith, arrived early. They seemed a little nervous. *more*→

Surprised sperm donors had received coffee, hams, firewood, art supplies, feminist novels, and once, an expensive calculator. One prospective mother always gave champagne. She thought of the cork popping off, the streaming bubbles . . . she thought it was just like what he was giving her.

"I hope he likes the wine," said Judith, handing over the present for the donor.

"Do you know whether he likes red or white better?" asked Rachael.

"I don't think he cares," said Lily. She encouraged the women to give the donors presents, since she didn't think that paying them would encourage honesty on the medical history forms. And the women really took to this gift giving. Surprised donors had received coffee, hams, firewood, art supplies, feminist novels, and once, an expensive calculator. One prospective mother always gave champagne. She thought of the cork popping off, the streaming bubbles . . . she thought it was just like what he was giving her.

"It's a cold night, it's a good night to have some wine," said Judith as Lily was hurrying out the door.

Jeff and Jim were happy with the wine. Jim took the bottle into the kitchen, while Lily and Jeff sat down in the living room. The room was sparsely furnished but filled with plants. Both Jeff and Jim, who were lovers , were donating sperm and the women kept giving them plants. Spider ferns, Boston ferns, and philodendron – they stood out starkly against the white walls.

"You know, they really don't have to give us anything," said Jim, returning to the living room, "Have you eaten yet, Lily?"

"No, I'll grab something when I get home."

"You should eat more, you're looking thin."

Lily smiled and promised to come over to dinner at their house soon. But the double dialogue had already begun. Outwardly, she continued talking to Jeff and Jim about the latest garage sale they had been to, about their newly refinished coffee table, but inwardly, Lily only thought: "I have to get going."

It was Jim's sperm she had come for this time. The sperm of a compactly-built man with deep, almost sad brown eyes. Compared to Jim, who was distinguishedly greying and often called "serious," Jeff was like a young puppy, an 18-year old blond, ringleted idealist who looked like, and was, a native California boy.

Jim and Jeff had been living together for a year and at one time they thought about having children together. They had, in fact, met Lily at a conference on gay parents. The idea was that maybe some woman would be willing to incubate one of their children and then turn it over to them. But Jeff had finally decided he wasn't ready to have children.

So they tabled the idea of having children, but Jim and Jeff kept on donating sperm, sometimes more than once a week, for many months. If lesbians wanted to have children, and couldn't or didn't want to adopt, well, Jim and Jeff wanted to help them. Why shouldn't gay men help out? thought Jeff and Jim, it was one way to help bridge the gap between the lesbian and gay male communities.

No doubt about it, though, donating sperm could be a drag. Lily asked her donors to abstain from sex for a few days before donating, to increase the sperm count. And for a while, she had been using both Jim and Jeff, on alternating days.

"You have no idea," said Jeff to Lily, "what this is doing to our sex life."

Jim blushed. "I'm sure Lily doesn't want to hear about our sex life."

"Yes, I would," Lily laughed, "I'd love to hear all about it sometime when I have more time, but these guys in here" (she held up the brown paper bag with the jar of sperm) "are dying as we sit here talking."

But, oh, the stories they could tell her. Jacking off into the jar, they thought, was a bit cold. So they have incorporated the vessel into their lovemaking.

Lily gets very upset when you do that, Jim," says Jeff, grinning. "She comes in and we say, oops, we're sorry, we missed the jar."

"It's so insane," Jeff would tell her, "You know, there's so much you have to do right and this is LUST you know, you have lust on the mind, and then you have to slow down and say, Well? Have we boiled the jar? Is the jar clean? Because if the jar isn't clean, bacteria can disturb the sperm. So you say STOP. Get out of your clutch, go to the kitchen, boil a jar, come back, and just as you are about to come you go WHERE'S THE JAR! Let's stop again and look for the jar. Oh, now I'm not in the mood . . ."

"Or you miss the jar," laughs Jim.

"Lily gets very upset when you do that," says Jeff, grinning. "She comes in and we say oops, we're sorry, we missed the jar . . ."

"And then she says, 'When did you miss? At the beginning of the ejaculation or the end?' "

"And you have to time it just right," Jeff cuts in again, "Lily says she will be over at 7:30 on Wednesday night. Right, you say. So at 7:00 you start doing what-not and then BRRRING! Lily rings the doorbell early. So you jump out of bed, tell her 'TEN MINUTES!' and then jump back in bed." Jeff looks coy. "Sometimes she comes before I do."

"And then sometimes you get an empty feeling afterwards," says Jim. "The first few times I thought, is this all there is to it? You know, I thought it was supposed to change my life, but it's no big thing."

"It's like the first time you ever masturbated," muses Jeff. "You think, WOW this is very interesting, but it's very . . . I don't know . . ." He looks very young for a moment, very vulnerable, "Like the first time I ever masturbated, I just curled up afterwards, in a blanket . . ."

Is this just the normal empty feeling that sometimes comes after orgasm? Or is it different, something about ejaculating into the VOID, into a glass jar that is driven across town and deposited into some unknown woman's body? This artificial insemination business breaks the love-sex-conception chain all apart. But Jeff is quick to point out that he was always gay. For him the connection between his love and sex and conception never existed. Jim, on the other hand, was heterosexual until he was 23. And though he always dreamt of having children, that didn't hold him back when he finally gave in to loving men. How often does love and sex go together anyway, much less love, sex, and conception; even for heterosexual people, even for married people?

And at any rate, says Jim, "What does sexual preference have to do with having kids?" A child needs love, lots of it, Jim says, and responsible parents, and it doesn't matter if they be two men, two women, or a man and woman.

"These guys are biting the dust," said Lily again. She had to get back to her women. Jim and Jeff walked her to the door and made her promise to come over to dinner soon.

She tucked the brown paper bag into her pants to keep it warm.

"I'll call you," she said. Jim put his hand on her arm.

"Lily," he said, "Tell her I hope this one really works, tell her I hope this one does it for her."

It didn't work, and soon afterward Rachael gave up trying to get pregnant. Around the same time, Jeff and Jim decided to take a vacation from donating sperm. Gaea also stopped trying to get pregnant. A week after her insemination she started feeling bloated. Sometimes she felt ravenously hungry, but then the slightest taste of alcohol or coffee would upset her stomach. Weeks later, the test confirmed what she already knew: Gaea is pregnant.

It is here that the narrative breaks down. Certain realities now impinge upon the story. This article was to have concluded with a glimpse of the future: a scene depicting a lesbian artificial insemination mother and her child. There are a few mothers whose children are now three or four years old. I was not able to find one mother, however, who was willing to be interviewed.

Fear is born along with the lesbian child. The heterosexual society fears that the child will be lost to the mainstream; that the child will be a homosexual, or in some other way fail to conform to the sex role status quo. The lesbian mother fears that her child will be taken away. Up until recently, lesbian mothers lost child custody cases 90 per cent of the time, solely because of their sexual preference. Some lesbian rights lawyers

claim that those odds have improved – to the point where lesbians have a 50/50 chance of keeping the children they have been raising.

Lesbian artificial insemination mothers, who represent a small portion of this country's estimated 1.5 million lesbian mothers, can't be sure what their rights are. Most states don't recognize artificial insemination. The few existing state laws assume that artificial insemination is performed by physicians to impregnate married women whose infertile husbands have given written consent.

These artificial insemination laws specify only that husbands shall be the legal fathers of artificial insemination babies. However, in one New Jersey case where a single woman inseminated herself with a male friend's sperm, the man sued for and won child visitation rights over the "strenuous objections" of the mother.

Lesbians who know their donors often have them sign agreements relinquishing their rights and responsibilities to the child. But if the donor has a change of heart, lesbian rights lawyers say these written agreements may not stand up in court. Consequently, many would-be mothers are using anonymous donors. They fear, however, that if homophobic legislators get wind of lesbian artificial insemination, they will enact legislation against it and somehow find a way to take their children.

So it is the specter of homophobia that fills the place where an image of the lesbian family would have been. This is a pity, because if there is anything shocking about the lesbian family, it is its normalcy. All the existing psychological and demographic studies show that lesbian mothers are very similar to heterosexual single mothers, and share the same problems and concerns for their children's upbringing. Artificial insemination children per se have not been examined, but the studies all show that the children of women who conceived "naturally" and later became lesbians are "normal" in their sexual preference, gender identity, adherence to traditional sex roles and general mental health. The children of lesbians are distinguished only by the stigma they bear, and the studies indicate that rather than being damaged by their difference, the children of lesbians are growing up unusually tolerant of sexual diversity.

Barbara Bryant's demographic survey of 185 lesbian mothers[1] revealed that the number of homosexuals or bisexuals among their grown children is no larger than the number of homosexuals and bisexuals in the general population. These lesbian mothers indicated that at times their children had been embarrassed about their mothers' sexual preference; but the majority of their children, the mothers said, eventually decided that it was the society's bias and not their mothers' behavior that was wrong.

Most of the lesbian children who have been studied have not yet reached puberty, but children begin to develop their sexual identity between the ages of three and six. By the age of two, they have already learned culturally prescribed adult sex roles.

When Dr. Richard Green[2] studied 21 children between the ages of five and 14 who live in seven lesbian couple families, he found evidence to support Bryant's findings. Most of the children in Green's study understood their parents' sexual preference, yet the four pubescent children all exhibited exclusively heterosexual fantasies and bahavior.

In one family, the 14 year old girl and 12 and 13 year old boys reported heterosexual erotic fantsies, masturbation to pictures of the opposite sex and "crushes" on as well as "petting experiences" with members of the opposite sex. These children understood that there are both male and female homosexuals. "That's their business and it's OK," they told Green. The twelve year old boy had been teased by a schoolmate who called his mother "butch." The lesbian's son didn't respond, and the teasing stopped. He told Green: "She can be anything she wants as long as she's still my mother."

The ten year old son of another lesbian couple said he was teased by a schoolmate who said: "Your mother is a queer!" The boy told Green he ignored it. He knows his mother is a lesbian, he said, "It's just a woman and a woman loving each other." When he grows up, however, he says he doesn't want to be a homosexual, "because I have a girlfriend." His seven year old sister, who has also been teased, says she has a "boyfriend."

When Green, working with three other researchers[3] expanded their study to examine 101 three to 11 year old children divided between 51 lesbian and 34 single heterosexual mothers, they found no evidence of homosexual interest in any of the children. The majority of the boys and girls in each group, Green reported, wanted to get married and have children.

When Dr. Martha Kirkpatrick[4] studied a matched sample of 20 children of lesbian mother couples and 20 children of single, heterosexual mothers, from the ages of five to 12, she also failed to find significant homosexual tendencies. "We didn't find any girls who say, 'I don't want to get married and have children; I don't want to have anything to do with boys,' " Kirkpatrick noted. Significantly, the one child who had initiated some homosexual sex-play with other children, was the son of a heterosexual mother.

No studies have been undertaken to examine lesbian vs. heterosexual mothers' encouragement of their children's sexual preference. Bryant,

The "average" American father spends 12 minutes a day with his children.

however, reported that the lesbian mothers in her survey, ". . . Overwhelmingly support the child's right to make her or his own decision (on sexual preference) free from persuasion." Lily, the "inseminator," and Joan (not her real name), a Berkeley health educator who runs "considering parenthood" groups for both lesbian and heterosexual women, agreed that most lesbian mothers don't care which sexual preference their children adopt. Joan and Lily, however, both said that they think most of the artificial insemination children will turn out to be heterosexual.

Kirkpatrick was the only researcher to look specifically at the emotional status of both lesbian and heterosexual mothered children. She found no differences in the presence or absence of emotional problems or "pathology" in the children, but she noted that some children in each group showed the effects of the "pain and disruption" of divorce.

Both Kirkpatrick and Green reported that virtually all of the children they studied had the appropriate gender identity. The boys knew they were boys and the girls knew they were girls. Kirkpatrick noted that all of the boys she studied dressed like boys while the girls dressed like girls – except for one lesbian-mother boy who had cross-dressed and one son of a heterosexual mother who had been cross-dressed by his sister.

In order to assess the children's adoption of culturally appropriate sex roles, most of the psychological studies used toy or activity preference tests. A child's play is her/his work, the theory goes; therefore, a child's perceptions of adult sex roles should affect their preference for toys, games and activities.

By taking the children's play histories and interviewing them in a play room, Kirkpatrick discovered that neither the boys nor girls of lesbian or heterosexual mothers engaged in cross-sex play (except for the minimal cross-dressing) or playmate choice. Dr. Beverly Hoeffer came up with similar results in her study of 20 children of lesbian mothers and 20 children of heterosexual mothers, aged six through nine.[5] In Hoeffer's study, 90 per cent of the boys in both groups preferred "masculine-type" toys – including a police car, tool kit, snake and magent. The girls in both groups preferred "feminine-type" toys (a cradle, kitchen utensils, mirror and brush set) only slightly more often than they preferred "neutral" toys (a whistle, colored pencils, a puzzle). Green's findings replicated Kirkpatrick's and Hoeffer's findings. Over and over again the boys wanted to play with trucks, cars and motorcycles, while the girls picked dolls. While most of the boys said they wanted to be policemen, firemen and scientists, the girls wanted to grow up to be doctors and nurses. Green concluded that there were no significant differences between the children of lesbians and heterosexuals on the play and vocational preference tests. The girls of lesbians, however, were slightly more apt to show an interest in traditionally "masculine" careers while the girls of the heterosexual mothers preferred traditionally "feminine" play activities more often than the girls of the lesbian mothers.

Hoeffer also gave the children in her study a word test to determine their sex role self-concept. The children were asked to examine a list of 12 word pairs in which each pair (except for two neutral pairs) represented the traditionally masculine and traditionally feminine poles of behavior. In five of the word pairs the "masculine" trait was deemed the more socially desirable trait, while in the other five word pairs the "feminine" trait represented the behavior most approved of. The children were asked to mark where they "fit" between the "masculine" and "feminine" poles. Were they, for example, more "strong" than "weak," more "gentle" than "rough," more "sensitive to other people's feelings" or "insensitive."

Hoeffer found no significant differences in the way the girls scored on the word test. The girls of lesbian mothers, however, tended to score slightly higher on such "masculine" traits as "adventurous" and "likes to be the leader," while they scored lower than the girls of heterosexual mothers on "feminine" traits such as "neat" and "gentle." The boys in both groups, likewise didn't score significantly different on sex role self-concept, though the boys of lesbian mothers scored slightly higher than their counterparts on such "feminine" traits as "gentle" and "sensitive to other people's feelings."

What the word test revealed was that boys and girls in both groups more rigidly adhered to sex role stereotypes in their play than in their self-concept. In addition, all four groups of children indicated that their ideal self was "androgynous" – scored high on both "masculine" and "feminine" socially-valued traits. The other interesting trend that Hoeffer found was that while the girls rated their peers as very similar to themselves on sex

Though some lesbians have been estranged from their families because of their sexual preference, Joan noted that the birth of a child often re-unites the mothers with their own families.

role traits, the boys in both groups believed that their peers had more masculine type traits than themselves.

Hoeffer came to the conclusion that the boys in both groups might have had a less "masculine" self concept due to a lack of male role models. Her data indicated, however, that there was no significant difference in the amount of contact the children of lesbians and heterosexuals had with "significant male adults." A Danish study of 15 children of lesbian mothers between the ages of six and 19, also showed some evidence that boys were "insecure in their relationship to the male role."[6] Leick and Nielson, the researchers who conducted the study, concluded, however, that their finding, "could not be used as an argument against letting children remain with their lesbian mothers." Leick and Nielson, like Hoeffer, thought that the boys' sex role self-concept was a result of a lack of consistent contact with men, a problem that the sons of heterosexual single mothers share.

But it may turn out that even boys who grow up in traditional two-parent families experience this "insecure" "male" self-concept at some point in their lives. The numerous studies that have been done examining the effect of "father absence" on boys fail to prove conclusively that father absence in and of itself altered boys' "masculine" identity.[7] It is also important to remember that even in "father present" families, children virtually always have much more contact with their mothers than their fathers. When Philip Stone analyzed data developed by Alexander Szalai on how a sample of 2,000 Americans spend their time, he found that the "average" American father spends 12 minutes a day with his children.[8]

Both lesbian and heterosexual single mothers, nevertheless, are reported to seek out male role models for their children of both sexes. Bryant reported that, according to the lesbian mothers she surveyed, 80 per cent of their children had male role models in their lives. Many lesbian artificial insemination children may have no contact at all with their fathers, but according to Joan, these children are not growing up without contact with men. She explained that when lesbians become mothers, they join the broader community of people with children. In addition to having contact with male teachers and the fathers of peers, the lesbian artificial insemination children are also finding male role models in their mothers' families. Though some lesbians have been estranged from their families because of their sexual preference, Joan noted that the birth of a child often re-unites the mothers with their own families.

Child custody courts may be pleased to learn that neither the children of lesbian or heterosexual single mothers break out of sex role stereotypes. The mothers, however, may be disappointed.

The lesbian and heterosexual mothers that Hoeffer studied often scored androgynous on their test of sex role self-concept. They encouraged their children to be androgynous and give up their guns and barbie dolls for "neutral" non-sex-typed toys. Joan commented that the lesbian artificial insemination mothers she knows also encourage androgyny in their children. They don't encourage their girls to act "like boys" or their boys to act "like girls," said Joan, but they do try to raise children who will "look at the world through the eyes of someone who is not sex-role stereotyped to begin with."

What the results of all the studies seem to indicate, however, is that parents just don't have that much influence on their children's development of sexual identity. "Children do not live in a universe composed entirely of their home environment," concluded Green. Their sexual identities are molded by their peers, their peers' families, their teachers and the books, films and television that they are exposed to.

So it seems that the children of lesbian mothers won't make waves in the heterosexual mainstream. If they have any effect at all, it may be to allay people's fears about lesbian motherhood. It may turn out, in fact, that it is the lesbian community itself that is the most effected by these children. There is some indication that artificial insemination produces an unusually high number of boys.[9] There have always been boy children in the lesbian community, but if the artificial insemination baby boom continues, there will be a lot more. What effect these boys will have on the separatist segments of the lesbian community is anyone's guess. ■

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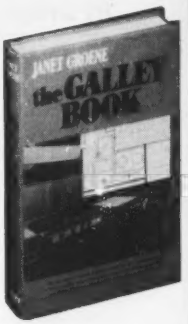
9. The **Toronto Star** newspaper reported in January, 1979 that researcher Armand Karow told the American Association for the Advancement of Science that artificial insemination raises the likelihood of having a boy to 60 per cent. A search of the medical literature, however, revealed no published data by Karow or anyone else to document this statement. A series of studies by Rodrigo Guerrero (**International Journal of Fertility** Vol. 15, No. 4, October-December 1970, pp. 221-225) show, however, that artificial insemination causes an excess of boys when the insemination is done on the day of ovulation or up to two days before, and an excess of girls when the insemination is done after ovulation or three or more days before. When "natural insemination" was used, Guerrero reported an opposite trend: less boys around the time of ovulation (as indicated by the shift in basal body temperature). Guerrero did not indicate whether frozen or fresh sperm was used for the artificial inseminations, but if his findings apply to fresh sperm (which most lesbians are using) they could indeed mean more boys for lesbians, since lesbians often try to inseminate as close to ovulation as possible to increase their chances of conceiving. Both Joan and Lily add that they are seeing a disproportionate number of boys born to their lesbian friends. According to Lily, 12 of the 13 lesbian artificial insemination mothers she knows have boys.

The Galley Book



It's meant for boats, but anybody with any kind of tiny or mobile kitchen will find this an invaluable book. It's far more important than a cookbook. The stove advice alone saved me many dollars and hours (she recommends pressure kerosene over alcohol and LP gas stoves — and I never knew pressure kerosene stoves can manage with plain old diesel oil). —SB

The Galley Book
Janet Groene
1977; 209 pp.

$9.95 postpaid from:
David McKay Co., Inc.
750 Third Avenue
New York, NY 10017
or Whole Earth
Household Store

•

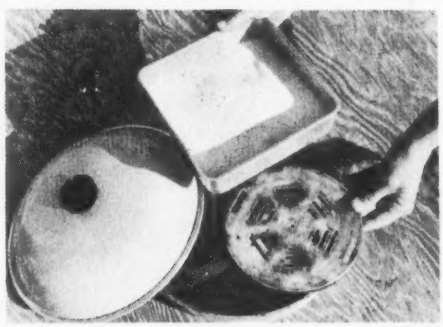
Stove-Top Baking

Back in the 1930s a manufacturer of heavy aluminum cooking ware came out with a line of pots and pans, and a sales pitch aimed at American country cooks who were using kerosene wick burners and two-burner gas plates. In a recipe book it was explained how to bake atop the stove — an innovation that at last allowed summertime baking without heating up the big, hot coal cookstove.

The technique is still valid today. Its secret is the use of heavy pans with heavy, tight-fitting lids. The unit, heated evenly throughout, surrounds food with heat, just as an oven does. We haven't found anything superior to heavy aluminum for the job.

•

In our galley we have a 4-quart heavy aluminum pressure cooker and an 11-inch Club Aluminum covered skillet (chicken fryer), both of which are used for baking, and a heavy 2-quart Lifetime stainless-steel saucepan, which is used for stove top casseroles.



The Groenes' stove-top oven consists of this Club Aluminum skillet and lid, pressure cooker rack to keep baking pan from resting on skillet bottom, and appropriate cake and pie pans.

The Cockpit

WW II air war chic. Outstanding fleece-lined flight jackets, silk scarves, keeno flashlights, etc. at high altitude prices. —SB

The Cockpit Catalog
Free from:
The Cockpit
Division of Avirex
468 Park Avenue South
New York, NY 10016
or Whole Earth
Household Store

The Irvin R.A.F. Sheepskin Flight Jacket

The glory of a brave, bygone era lives on in this WW II sheepskin jacket first issued by the R.A.F. in 1938. Recreated with strict adherence to original Air Ministry specifications, this is the flight jacket that fighter pilots refused to give up when it was replaced by fabric flying suits. Exceptionally warm and comfortable, the Irvin was a great aid to bomber crews facing sub-zero temperatures. BROWN LEATHER EXTERIOR IS SPECIALLY TREATED FOR WATER RESISTANCE. Special sleeve zippers and buckled belt. Sizes 36-46. Sizes 48-50 on request. $300.

Communications

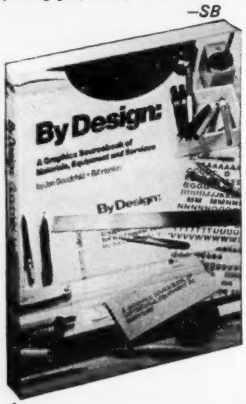
By Design

So useful a book that I had to wrest it from the cumulative grasp of **CQ***'s art department, who were using it. They were ordering drawers for our page flats and considering other cutting and inking implements than the ones we use, comparing their judgments with Jon Goodchild's, doing what you do in a real good catalog or sourcebook: SHOP. If you're making anything graphic, you'll revel.*

—SB

By Design:
(A Graphics Sourcebook of Materials, Equipment and Services)
Jon Goodchild and Bill Henkin
1980; 255 pp.

$12.95 postpaid from:
Quick Fox
33 West 60th Street
New York, NY 10023
or Whole Earth Household Store



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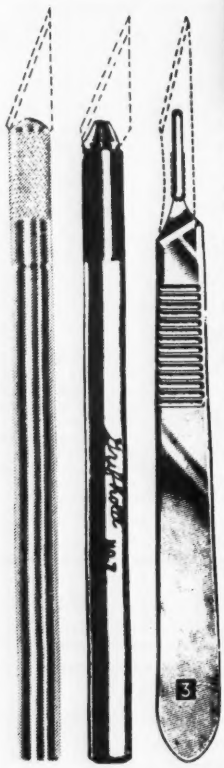
Fiskars Scissor

The precision ground surgical steel blades of this Finnish tool hold sharp edges for years. This is a lightweight version of tailor's shears, with molded plastic handles, available in 8" right or left hand models.

Cost: $8.95

Most art, craft, and hardware stores



←

Knives

It's not the body, but the blades that cost you money over the years, and if you've used the standard No. 11, you know they don't last long at all. Our advice is to invest in surgical steel blades and a fine oilstone, and you can stop running out to the store for those endless packs of 100 ordinary blades.

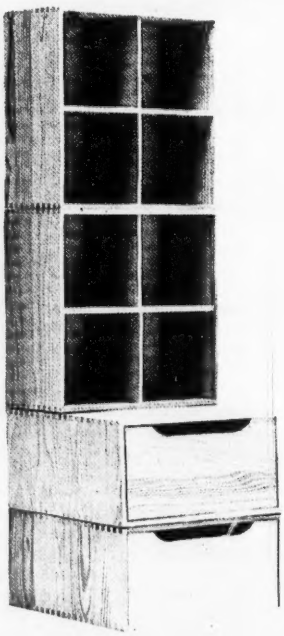
→

Britta System

A basic solid pine drawer and divided cube, also solid pine, comb-jointed and glued and finished in clear lacquer. The adjustable internal divisions make four open shelves. Combinations of these two units make a flexible system that looks good anywhere.

Cost: drawer unit, $69; cube units, $59

Conran's



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Communication Arts (Palo Alto)

The American magazine most in the vein of **Graphis** and **Gebrauchsgraphik**, **CA** is also largely a collection of portfolios, mostly by United States designers, illustrators, and photographers. Each issue includes news items of general design interest, an editorial, new product information, and book reviews. **Communication Arts** is beautifully produced, very well edited and designed with extensive color reproductions. One of the best American graphic design journals.

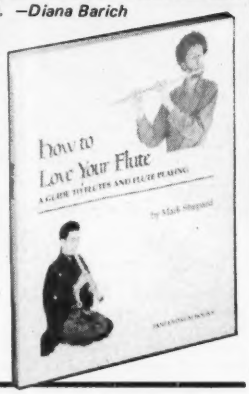
Published bi-monthly; $26 per year; single copies $4, except for two special issues a year, the CA Awards issue ($14) and the ART Awards issue ($9).

Coyne & Blanchard, Inc.

How to Love Your Flute

inspire 1a. archaic: to breathe or blow into or upon *b. archaic:* to infuse (as life) by breathing . . . *2b.* to exert an animating, enlivening, or exalting influence upon
—Webster's

Mark Shepard's soul-felt passion for the flute resonates through his book like music. It's a comprehensive guide, with something for everyone from novice to professional, and so well written that it's a pleasure just to browse through it. I'm not sure how he managed to present so much information so simply and clearly, but it's clean as a whistle. This book inspires. —Diana Barich



How to Love Your Flute
(A Guide to Flutes and Flute Playing)
Mark Shepard
1980; 97 pp.

$6.95 postpaid from:
Panjandrum Books
11321 Iowa Avenue
Suite 8
Los Angeles, CA 90025
or Whole Earth
Household Store

Letter vs. phone

Dear Stewart:

Thumbing the spring issue, I take typewriter in hand not to address the momentous issues of the day, but to comment on your footnote, page 56, on the energy economics of correspondence versus the telephone. I hope somebody does give you a computed analysis. Meantime, contrary to most people, in my personal time energy budget I find correspondence by far the most efficient and effective. I will have written this letter to you and gotten it out the door in less time than I would spend on hold if I were to telephone you. You can read it in less time than we would spend on pleasantries. And like you (I assume) I receive hundreds of communications a week from readers, all of whom warrant an answer of some sort. I have tried the cards you use and found them wanting.

I'm sure the equation would be reversed if I used a secretary to actually type the damn thing. I write it flat out, she mails it. Now I am looking for envelopes that will avoid retyping the address outside, and still won't look like bills.

Even worse as a time waster than the telephone is the tape cassette. People send me rambling cassettes I have to listen to in real time. I don't do it. Haven't got enough real time.

By time accounting, letters win hands down for this busy editor. By energy accounting, I don't know. How to measure the price of making paper and envelopes, and carrying the physical McCoy, versus the copper network of the telephone?

Time on this letter? Under four minutes.

Best,

John Kelsey, editor
Fine Woodworking

John — I suspect editors fall into two classes: 1) letter, 2) phone. I think I prefer the work of letter editors — more careful, thoughtful, probing. Unfortunately I'm a phone editor. (For outgoing anyway. Incoming, all I can handle is letters.) —SB

Selected Writings of Gertrude Stein

Gertrude Stein is not as weird as you think she is. She and her writing have a reputation for bizarre inaccessibility that started in the twenties when an expatriate lesbian who didn't use commas seemed strange beyond words to most Americans. If you actually read what she wrote, you'll find that a lot of it is straightforward, easy to understand and funny. The lack of commas is its only strangeness besides high quality.

And the stuff that is strange isn't that scary. Her word games are fun to read, especially out loud. You don't need a James Joyce-style line-by-line commentary to get it. You just need to be a speaker of English who's willing to relax and have some fun with the native tongue.

Gertrude Stein met words on an equal basis. She didn't bully them into submission nor did she let herself be bullied by past lives and meanings they may have had. She greeted them as interesting playmates and gave them and herself freedom. For a writer, reading Gertrude Stein is the perfect cure for school. In school, you feel like you can only say things that are safe and stale. Stein makes you feel that every time you use a word it's new if you'll let it be.

This collection has good examples of all of Stein's ways of writing. Included complete is the best introduction to her straightforward style — **The Autobiography of Alice B. Toklas.** *(I admit that the fact that it is written by Stein in the first person as if she were Toklas is a little tricky, but other than that it's perfectly clear and full of scrumptious Paris-in-the-'20s gossip.) Also included whole is* **Tender Buttons,** *which is the best place to start in Stein's fun and games, preferrably aloud, with a liter of wine. And if you like either of those, there's lots more sort of like them in this very book, and even more in the library.*
—Anne Herbert

Selected Writings of Gertrude Stein
Carl Van Vechten, Editor
1933, 1972; 706 pp.

$5.95 postpaid from:
Random House, Inc.
455 Hahn Road
New York, NY 10022
or Whole Earth
Household Store

•

My father was a quiet man who took things quietly, although he felt them deeply. The first terrible morning of the San Francisco fire I woke him and told him, the city has been rocked by an earthquake and is now on fire. That will give us a black eye in the East, he replied turning and going to sleep again. I remember that once when my brother and a comrade had gone horse-back riding, one of the horses returned riderless to the hotel, the mother of the other boy began to make a terrible scene. Be calm madam, said my father, perhaps it is my son who has been killed. One of his axioms I always remember, if you must do a thing do it graciously. He also told me that a hostess should never apologise for any failure in her household arrangements, if there is a hostess there is insofar as there is a hostess no failure.

•

I always say that you cannot tell what a picture really is or what an object really is until you dust it every day and you cannot tell what a book is until you type it or proofread it. It then does something to you that only reading never can do. A good many years later Jane Heap said that she had never appreciated the quality of Gertrude Stein's work until she proof-read it.

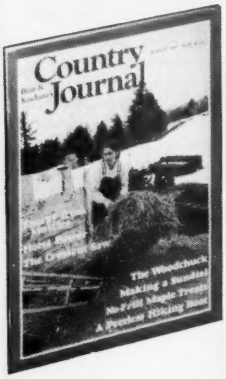
—The Autobiography of Alice B. Toklas

Magazines

Content Style Consequence

Country Journal

Like well-aged Vermont cheddar or dark maple syrup, **Country Journal** *is a top-quality New England product. Although of special interest to homesteaders and those in rural areas, it's so well done as to make good reading for anyone. Excellent photos, tasteful layout, perceptive editorials and (especially in recent issues) a sense of responsibility in publishing how-to information. Even the ads are good.* *—Lloyd Kahn*



Blair & Ketchum's Country Journal
Richard M. Ketchum, Editor

$13.50 /year (12 issues)
from:
Country Journal
P.O. Box 2405
Boulder, CO 80322

Content Style Consequence

American Forests

Once the voice of the timber industry, now the voice of forest environmentalism, the small logger, the woodlot owner, the tree lover, and a bit still of the industry. A nice mix, making work more interesting for all of them. Now that I think of it, it's probably far more effective environmentally than the publications read only by environmentalists. *—SB*

American Forests
(The Magazine of Forests, Soil, Water, Wildlife, and Outdoor Recreation)
Bill Rooney, Editor

$15 /year (12 issues)
from:
The American Forestry Association
1319 Eighteenth St. NW
Washington, D.C. 20036

•

John Muir

He never figured out how to be
A lily of the fields or a poppy
Bobbing and dipping his head in a poppy sea.

He was always the pine, alone and clinging
To his crag, where the ancient granite peeled
To drop a thousand feet: with the storm clouds singing

In dreary minors around his head. And when
The gales shrieked down the valley and through his branches,
He simply dug his roots in deeper again.

Driven far from the grove, his winged, cone —
Spawned seed found no shelter but a lucky crevice.
From the beginning he had to split stone.

He grew to twists and knots and unpinely angles
Of limb — but he grew above the straighter ones —
And bound himself to granite with iron tangles.

When the lightning shattered his stone stronghold,
He raged to smash on the boulders below.

—Cappy Hanson

•

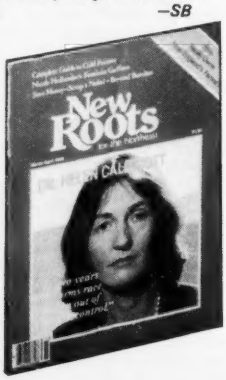
Some evenings I linger in the barn, after seeing that everyone has feed and water. I am drawn toward the third stall down, where Bonnie, a big black Percheron mare, resides. Sometimes she tries to get my attention by doing something silly, like putting a foot in her water, or picking up her feed bucket and throwing it into the next stall. Sometimes, when I go to her, she turns away because she feels I have neglected her. Other times, she may grab me by the collar when my back is turned and pull me in. Inevitably it ends up the same way, with me brushing her and talking to her, running my hands over mountains of muscle, and picking up those feet the size of dinner plates.

Most beautiful is her head, and those gentle, intelligent eyes. Looking into them, I think of her ancestors. The heavy breeds of horses were developed during the dark ages to carry knights in armor, bred from the wild horses of Northern Europe and the Oriental types left behind by the Romans.

Content Style Consequence

New Roots

After watching this regional (American Northeast) bi-monthly for a year, I'm convinced it's worth having. Sort of a low-rent **Country Journal** *($8/year vs. $13.50),* **New Roots** *speaks responsibly for a younger and somewhat more political audience.* *—SB*



New Roots
J. Mitchell Anthony, et al., Editors

$8 /year (6 issues)
from:
Box 548
Greenfield, MA 01302

•

The tales of Arab and European investors buying up New England's farms turn out to be not much more than rumor's first cousin. It's the out-of-state *native* capitalists who are consuming our family farms.

Content Style Consequence

Vole

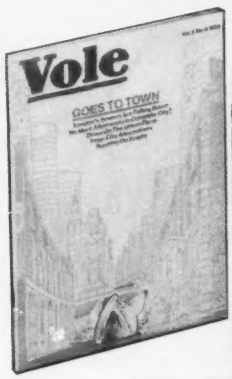
Edited in London by Richard Boston, a shameless punster, **Vole** *is quirky but substantial. It takes the broadest possible meaning of ecology for its rubric and covers British and continental environmentalism (including antinuclear politics and green parties), country matters, city matters, decentralism, real ale, and good cooking. Like many British magazines, it is written by literates; this quality alone might invite your subscription. What's more, it's eclectic, coherent and more personable than* **The Ecologist.** *Would be indispensable in Britain and extremely tempting to the American eco- or Anglophile. Humor and utility — what more could you ask?*

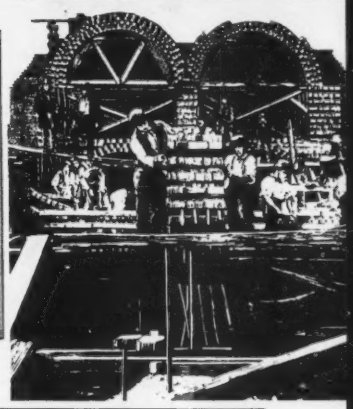
—Stephanie Mills

[Suggested by Michael Kenward]

Vole
Richard Boston, Editor
£18 /year (airmail)
£11.50 /year (surface)

from:
20 Fitzroy Square
London W1P 6BB
England





Up Shit Creek

Jacqueline Hilton investigates the decline and possible fall of London's sewerage system

Content Style Consequence

The Beast

Animal factories, nuclear pollution, live animal experiments — the grisly interaction of us humans and the beasts of the world are the domain of this excellent quarterly from Britain. Helping to organise effective protest through an events program, reporting on worldwide animal abuse in a popular and effectively graphic way.

—David Wills

The Beast
(The Magazine that Bites Back)
John May, Editor
£4 /year (4 issues) from:
2 Blenheim Crescent
London W11
England

↑

News broke recently that baboons being used in crash tests by the French Organisme National de Securite Routiere (ONSER) came from a Sussex-based company: Shamrock Farms Ltd. The Beast sent newshound SIMON-CLAUDE BOLTON to investigate.

The facts emerged in **The Observer** on January 13. It was alleged that at the ONSER laboratories at Bron, baboons and pigs were crashed on sleds at speeds of up to 60 kilometres an hour, and small macaque monkeys had brain damage induced by a skull-jerking device. According to the laboratory's medical supervisor, Dr. Alan Chapon, 29 of the 31 baboons killed since experiments started in 1971 came from Shamrock Farms.

Content Style Consequence

Panorama

TV Guide*'s new sister magazine* **Panorama** *proves it's impossible to be all things to all television watchers. The articles range from* **TV Guide***-type personality profiles pumped up to standard page size, to video equipment buyers' guides, to scholarly analyses of the Information Age. Although everything is well done and interesting, it all seems unnecessary somehow. The reporting on new technology is done better in other magazines (***Video, Videography, Datamation***) and would be still better done on television itself, where you could see these hard-to-find new communication systems in action. The rest of it shows that* **TV Guide** *was wise all these years in keeping its size digestibly small. And there's a wraparound news section which is mostly fluff. All in all, competent but so what?*

—Art Kleiner

Panorama
(Television today and tomorrow)
$12 /year (12 issues)
from:
Triangle Communications, Inc.
850 Third Avenue
New York, NY 10022

•

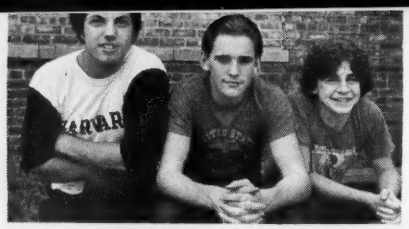
The familiar video screen is spawning more new products and product uses than any invention since — ironically — the automobile. And it is the American *home*, rather than the office or factory, that is at the center of change. The segregation of work life from home life, a phenomenon of the mechanical age, is likely to be reversed, and a back-to-home movement may well become the single most significant social trend of the 1980s.

When we think about it, going downtown, either by mass transit or in a gas-guzzling automobile, to spend eight hours in an energy-wasteful office has been essentially an organizational response to the *backwardness* of communications.

GOOD MOVIES

BY SHEILA BENSON

THE TIN DRUM



MY BODYGUARD

FOXES

Naziism doesn't march, it seeps into the working-class world of **THE TIN DRUM**, Volker Schlondorff's unerring film from Gunter Grass's prize-winning novel. But it is only one of the infantilisms in pre-war Danzig viewed by the relentless, pale-blue-eyed, prescient gaze of Oskar, the film's tiny hero. Oskar, who has, in an act of will, decided to grow no bigger than a three-year old, sees a catalogue of adult peculiarities to be repelled by: adultery, drunkenness, self-deception, lechery, suicide, murder and of course, the encroaching stain of Naziism. He protests them all, shrilly, piercingly, on his little drum and with a glass-shattering shriek. Schlondorff's film is by turns bawdy, stomach-turning, pastoral, Brechtian, hilarious and brilliant. If at its bottommost layer it does not move one as, say, **Padre Padrone** does, it might be because Oskar, who has a malevolent side as well as a nobly protesting one, seems beyond the need of any human worry. It is nevertheless a deeply memorable work, and David Bennent's Oskar is one of those strokes of casting – like Kinski as Aguirre, Bruno S. as Kasper Hauser or Hanna Schygulla as Maria Braun – which illuminate German films.

★

August will bring a perfectly marvelous film, as singular a discovery as **Breaking Away**. **MY BODYGUARD** grabs you unexpectedly. Ostensibly the story of a bright, funny kid (Chris Makepeace of **Meatballs**) forced to pay protection at school who hires a hulking "dangerous" fellow highschooler as his bodyguard and changes both their lives. It's really about friendships and the shifting of strengths within them. A first screenplay by Alan Ormsby and first direction for actor-producer Tony Bill (**The Sting, Going in Style**), the film explores Chicago, from the Ambassador Hotel (where Makepeace lives, since his father, Martin Mull, is manager) to the West Side's Maxwell Street. With fresh affection Ormsby and Bill love their young people and they know very well what the threat of intimidation feels like. Since I doubt that one of us got through high school, college, graduate school or last Friday at the office without that particular stomach-clutching sort of pressure, I suspect that **My Bodyguard** will trigger a flood of memories for its audiences.

Every one of the actors is fine, but I became riveted by the performance of Adam Baldwin as the Lenny-like bodyguard, and in watching the struggle as what is inside him begins to emerge.

★

Is it a sad state of affairs that today's trailer-dwelling, oilworking Houston cowboys ride a mechanical bull in a bar instead of a live longhorn at a rodeo? No one in James Bridges' **URBAN COWBOY** seems to think so – most of the action hinges (unhinges) around contests on this padded, mechanically controlled chiropractor's delight housed at Gilley's, "the world's biggest saloon." The contest is romantic, a tug of war as two women snare the wide-eyed John Travolta: a no-nonsense spirited beauty (marvelously played by Debra Winger) and a sleek oil-millionairess, but the news of the movie is the performance of Scott Glenn as the rodeoing-parolee who steals Travolta's lady-love. Glenn's character will be hated by bright, liberated women (what macho Texans want, the film says, is a nice, sexy lady who'll keep the trailer real neat; the woman's touch is a hand smelling strongly of Clorox). They may nevertheless find themselves responding to Glenn viscerally. With his lean meanness, looks that are part Clint Eastwood, part Carradine brother, and a naked chest muscled like an armadillo's belly, Glenn is an arrogant, arresting sight. It's the best mix of actor and role of a sexy badman since Jack Palance strode into **Shane** all dressed in black.

The movie itself, when it gets over its faint, initial air of condescension towards its Texas folk, is hell's own fun. Not a small part of that is the music, performed by people like Mickey Gilley and Charlie Daniels; and Travolta does for the Western two-step just what he did for feverish disco. I suspect this one will clean up this summer; its calculation seems right on the money.

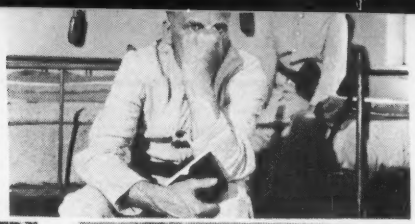
★

FOXES isn't flashy trashy exploitation, it's a well-realized study (script by Gerald Ayres) of four high-school age denizens of the San Fernando Valley who set about creating a world of their own since the adults around them can't or won't. The four – three newcomers, Kandice Stroh, Marilyn Kagan, Cherie Currie and the old pro of the group, Jodie Foster – are breathtakingly accurate in their observations, and until it breaks into a peculiar melodramatic turn, the script is soundly on-target. Sally Kellerman can be found as Foster's mother, a selfish but well-intentioned woman with a talent for disastrous liaisons. Director Adrian Lyne, another of the British directors emerging from television commercials, seems to have real empathy for his girls struggling for a foothold in an adult world. Together they have made a work of bitter wit, and great poignancy.

★

If **COAL MINER'S DAUGHTER** had sustained in its last third the enormous pride and humanity of its

COAL MINER'S DAUGHTER



WOYZECK

LITTLE DARLINGS

THE SHOUT

FAME

beginning it would be a film of lasting meaning. As it stands it's a splendid fragment, enhanced by twin performances, by Sissy Spacek as Loretta Lynn and Tommy Lee Jones as her husband Mooney, which shine with a plain truthfulness. The film is strongest in its portrait of the hill and holler folks of Appalachia, and in touches like the casting of Levon Helm and Phyllis Boyens as Loretta's parents. Doing an Appalachian stepdance, back straight, eyes up, Boyens looks for all the world like an animated version of one of Dorothea Lange's hollow-cheeked Dust Bowl mothers.

The pace mounts splendidly later when at 18 and the mother of 4, Lynn and Mooney set out to barnstorm every last one of the South's one-room radio stations with her first record. Spacek's young Loretta is naive and irresistible; Jones (suffering from what looks like Ronald Reagan's Grecian Formula hair gilding) is stubbornly supportive. The subliminal message of the film is in the enduring character of their marriage; but the script, in its last third, doesn't investigate enough the pulls that must have existed when her success finally engulfed them. (An exception is one splendidly-written telephone scene between Mooney and one of Loretta's fans – the script is by fellow-Kentuckyian Tom Rickman). And the family, focus of the early interest, is almost completely abandoned to a sort of success/setback/success montage at the end.

★

If you want actors you have to suffer a little for their art. Well, *her* art at least. Kristy McNichol is electrifying, a poignant revelation, but all around her in **LITTLE DARLINGS** are so dreadful – either hateful or cartoony – that it's difficult to suggest seeing it for one superb performance. But I would. On the other hand, in Klaus Kinski's **WOYZECK** everyone suffers, but it's as it's intended. As another Herzog staple, a hero driven mad by a corrupt, conscienceless world about him, Kinski is at the zenith of his powers, whose limits we may not even now have charted.

★

THE SHOUT is a cineaste's film: it works on at least three levels (visual, aural, and verbal). It is lingeringly fascinating, arguable, superbly crafted by director Jerzy Skolimowski, marvelously acted, and well off the mainstream. Its story, adapted from a short story of Robert Graves, may remind some of Peter Weir's **The Last Wave**, in its elements of Australian mojo, set against a very British foreground. It concerns an Englishman (Alan Bates) who believes that his soul has been shattered into four parts after an encounter with a North Devon couple, John Hurt the husband, an electronic music-maker and secret philanderer, and Susannah York, his childless wife. Too much piles in upon us at the very last apocalyptic sequence of the film, and the short story contains a crystal-clear point (that the English villagers' souls are each contained in a beach stone on the wind-whipped Devon coast) rather muddied in the film, but it is a sensuous, memorable work of great daring.

★

Alan Parker's **FAME** is brilliant, kinetic, exasperating filmmaking. It's **Chorus Line** and **All That Jazz**, high school level, using the raw talents and hopes of 40 or so young musicians, dancers, actors and singers – all supposedly students at New York's High School of Performing Arts – as background for an overwrought but undeniably electrifying film.

Parker (**Bugsy Malone**, **Midnight Express**) and his crew of British editors and cameramen are dazzling craftsmen. The first 40 minutes of the film whirl by in cross-cutting of the auditions among the school's four branches. (The staff is a model of restraint, and we feel for their choices.) One by one the eight or ten principals emerge, mostly unknowns, with the exception of Barry Miller who was the teenage suicide in **Saturday Night Fever** and Irene Cara from **Sparkle**, a much underappreciated picture.

The training is the film's strongest point – the labor, sweat and dedication needed to pull through four years at this formidable, free high school. Unfortunately, as the students advance, their personal problems blossom into heavy soap opera: the Puerto Rican actor who idolizes Freddie Prinze; the beautiful singer victimized by a sleazy casting director; the love affair of the rich ballet student (Antonia Francheschi) and the ghetto jazz dancer (Gene Anthony Ray) and its consequences. The four musical numbers are **Hair**-like outpourings by Michael Gore. In the cafeteria musical number, for instance, it seems impossible that you could crowd that many undulating, vibrating, shouting, singing, screaming kids into one space without at least one elbow in one eye, but it's a trademark of the film. And heaven knows, it's lively.

With all its excesses (surely the director of **Midnight Express** could not be expected to err on the side of subtlety), the dedication and the talents of the cast is the image that lingers; that alone is well worth the trip. ■

Learning

Transitions

A "guide to independent and educational travel" that consists almost entirely of articles and travel tips sent in by its travelling readers. It's usually about twenty pages long, printed on newsprint. The format and the writing are generally unpolished, but the articles are interesting, informative, and very timely. There are lots of specific addresses to help the traveller find work, classes, or any number of other situations all over the world. A number of inexpensive charter flights and other groups providing cheap transportation also advertise regularly. **Transitions'** *articles are often about Africa, Asia, and a lot of the less-touristed parts of the world as well as Europe and the more popular tourist spots.* —*Steve Dunnington*

Transitions
(A periodical guide to travel, work, and study abroad)
William L. Gertz, Editor
$5 /year (4 issues)
from:
Prof. Clayton A. Hubbs
18 Hulst Road
Amherst, MA 01002

•

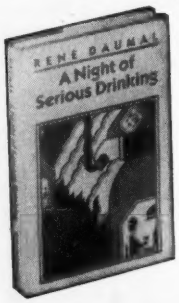
Grapes are harvested all over Europe, but the bulk of commercial vineyards are in France, Switzerland, and Germany. The Burgundy region of France has probably the greatest concentration of grape-growing, so it's also one of the easiest places to find work. There is no special government permit necessary to work in the harvest; finding a job is mainly a question of talking to growers in a particular area until you find one who needs help. Working conditions can vary quite a bit from farm to farm, but it's common to include room and board along with a wage. A 10-hour work day is common for which one is paid between $10 and $25.

As with any seasonal work, the *vendange* always employs a fair number of people from outside the area. Where I picked, there were entire families of Italians, ski instructors waiting for the snow to fall in the Alps, French students on vacation, and itinerant agricultural workers who joined local housewives and the grower's own family in bringing in the harvest. Noontime brings this collection of people together at the grower's house for a lunch of a delicious Burgundian specialty served with the house wine. The effort expended in cutting grapes is at least equalled in the energy that fuels the conversation at the table.

A Night of Serious Drinking

If you loved Rene Daumal's **Mount Analogue** *— the most compelling mystical journey in print — you will like his assault on Mount Logos, the myriad delusions and conceits of language. It's an earlier book than* **Mt. Analogue,** *just now translated from the French for the first time. A fine comic work it is, with barbs for all, including the author.* —*SB*

A Night of Serious Drinking
Rene Daumal
1938, 1979; 121 pp.
$8.95 postpaid from:
Shambhala Publications
Random House
400 Hahn Road
Westminster, MD 21157
or Whole Earth Household Store



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I refuse to accept that a clear thought can ever be inexpressible. Appearances, however, are against me. For just as there is a level of pain at which the body ceases to feel because, should it become involved in its pain, should it groan but once, it would seemingly crumble and return to dust; and just as there is a peak at which pain takes to the air on its own wings — so there is a level of thought where words have no part to play. Words are made for a certain exactness of thought, as tears are for a certain degree of pain.

•

"This place has only three exits, sir," one of the big blokes snarled! "Madness and death."

I tot them up on my fingers, feel very intelligent and ask:

"What's the third?"

Thereupon, they hurl themselves upon me, cover my mouth with their great mitts, pick me up like one of those floppy stretchers, run smartly up a small, steep, dirty stairway with me so arranged that my buttocks and head in turn bang against the steps; then we are at the top, staggering somewhat, in a garret where there is a low doorway and over it a sign:

SICK BAY

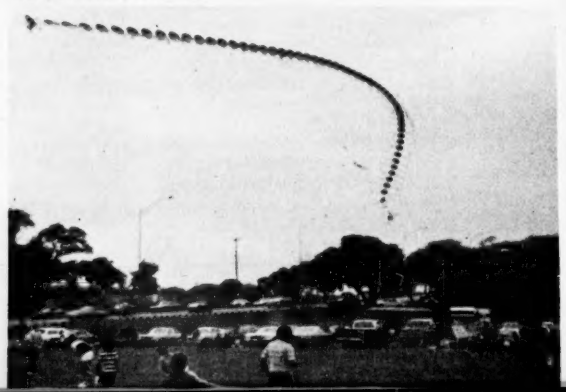
Kite Lines

The tug of the string that catenaries up to the swooping kite is a kid experience that lasts a lifetime. In recent years kite interest has proliferated, and the materials span continents and centuries. Keep up with this nice magazine. —*SB*

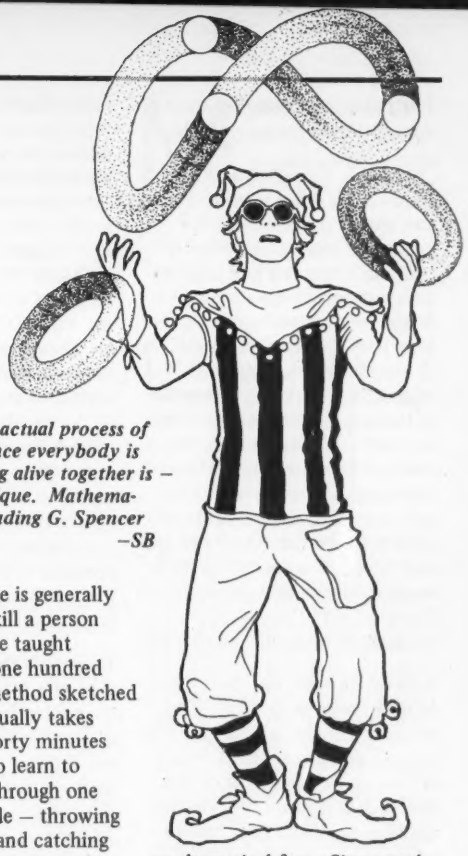
Kite Lines
Valerie Govig, Editor
$9 /year (4 issues)
from:
7106 Campfield Road
Baltimore, MD 21207

•

One of the thrills of a large kite like my 100-foot centipede is the overwhelming spectator interest and desire to participate. Ask for eight volunteers to help you and you end up with 25.



Juggling as Performing Mathematics



by B. John Sommers *Illustrated by Tom Parker*

"I never read anything that seemed this true about the actual process of teaching," said Anne Herbert about this piece. And since everybody is teaching everybody else all the time – that's what being alive together is – I figure you might be interested in refining your technique. Mathematician Somers was inspired to attempt the article by reading G. Spencer Brown's Laws of Form. *–SB*

Juggling is the art of suspending more objects than you have got hands.

The juggler supports an excess of objects over hands by arranging for each airborn object to be on a trajectory which will bring it near a hand for later catching. Often the "catching" hand itself holds another object at the time the first object is launched in its direction. In order to make the catch, the catching hand must make a "defensive" throw, ridding itself of its contents. This defensive throw must be answered fairly quickly by a catch from the hand which made the earlier throw. And now this hand too will have to make a defensive throw in order to be ready for its catch. In this way the burden of excess objects is shifted from hand to hand while the objects are distributed in space. As long as each individual object is at all times being held or on its way to being caught, the entire set of objects is suspended.

This definition of juggling is satisfied most simply and conveniently by what is called the cascade juggling pattern. The cascade involves three balls in two hands – belonging to one juggler. The cascade is generally the first juggling skill a person would learn. I have taught juggling to about one hundred people using the method sketched in section II. It usually takes about twenty to forty minutes for an individual to learn to juggle three balls through one cycle of the cascade – throwing each ball up once and catching all the balls. For most people it takes about twenty tries after the first success before the single cycle becomes easy and reliable. After a few hours' practice, the three balls can be suspended at will.

Instruction in juggling provides an interesting model for instruction in mathematics because there is a considerable similiarity between the processes involved in juggling and the abstract thought processes. In juggling, as in pure mathematics, ***no new facts are ever given to the student by the teacher.*** In the context of juggling, a new fact would be an entirely new use of the body, a new motor routine. The juggling student, however, can already throw and catch a ball, and these are the only two motor routines necessary for the cascade.

In the context of mathematics there has been much philosophical argument through the ages as to whether there could even exist such a thing as a new mathematical fact. Since math is often taken to be a collection of external, universal, and impersonal truths, this conservatism is quite natural. Allowing, however, that there are such things, and taking the perspective that "what you don't know is new to you," it still seems that the new facts of mathematics arise in students somewhat independently of a teacher. Every new mathematical fact becomes what it is only as a result of being ***seen as a derivative*** of other mathematical facts. A student must be able to derive a statement before it can be a mathematical fact for him. A teacher of math may set forth "the solution" to a problem, or demonstrate "the proper application" of a theorem, but unless a student is thereby prompted to have an experience of intellectual connection, insight, no math will have been taught. The mathematician's knowledge, like the juggler's knowledge, is an active doing,

not a matter of observation or description of the world outside.

Assuming, then, that neither mathematical nor juggling facts can change hands during the process of instruction, what is it that math teachers and juggling teachers do? In the juggling lesson, what is accomplished is two-fold: the old routines of throwing and catching are ***refined;*** and a new ***coordination*** – throwing defensively in order to catch – is created from the newly refined routines. The new coordination cannot come into existence until the old routines have been refined. Once the defensive throw routine exists it need only be caught up in a rhythm – and there is the cascade. It clicks like an insight.

A lesson in basic algebra is similar to a lesson in juggling. The successful graduate of arithmetic can add and can subtract with fair accuracy. By virtue of this, the student is ready to learn the algebraic principle that "equals added to equals gives equals." This new fact will only take hold, however, after the student has come to understand addition and subtraction formally, using x's rather than numerals. The new principle evolves through a process of ***formalizing*** the old facts and ***coordinating*** them. (After the student develops facility with the new principle, he can "juggle" equations.)

The refinement of throwing and catching is analagous to the algebraic formalization of addition and subtraction. A formal understanding of addition requires insight into the group structure of addition. It is this insight into addition ***independent*** of particular addends which the "x" notation of algebra expresses. It is the same quality, independence from particular circumstances, that characterizes a "refined" throw in juggling.

The coordination of the juggler's hands corresponds exactly to the mathematical facility of "simultaneously" altering two sides of an equation as a single algebraic step. In fact, the "simultaneous" additions (or subtractions) are not experienced as simultaneous any more than the throw-catch-unit is experienced as a simultaneous throw and catch. The additions are glossed into a single step by the procedure of figuring out what goes on the right hand side of the equal sign while actually writing the altered left hand expression. There is a rhythmic aspect to this process, a kind of syncopation. The new left hand expression creates a miniature problem to be solved in writing the right side – as a throw in juggling will demand a catch.

To expand this analogy further, note that the hand-coordination involved in the three ball cascade serves to maintain an average of one ball in the air at all times. Since the particular ball hovering there changes from moment to moment, the statement "one ball is in the air at all times" is only true in a certain sense. It is the abstraction "one ball," not any particular ball, that remains airborn throughout the juggler's volley. The juggling is the art of keeping that abstract ball in the air. In a like way the mathematical step which adds equals "simultaneously" to the two sides of an equation aims at preserving a mathematical abstraction: the equation which results from the transformation has the same conditional truth value, the same ***import,*** as its precursor. The transformation effected by any algebraic manipulation changes the equation's reading, but not its import. The throw-catch unit in the cascade changes the ***positioning*** of the balls within the pattern without changing the ***pattern*** itself. Both juggling and algebraic manipulation are examples of ***paraphrase:*** the preservation of an overall meaning or pattern while altering the arrangement of parts.

There is not much excuse in this world for teachers.

People learn to act in complex ways – and to develop a taste for complexity – through experience alone. A teacher can, however, facilitate the learning/appreciating process. The core assumption of the Cascade Teaching Method is that the teacher can be of most use by directly influencing the attention of the student – not the behavior (intention). In order to do this the teacher must have the conviction that the student's behavior is self-shaping, that it will evolve at its own rate and become its own interpretation/performance of the material. There is not one cascade, but as many cascades as there are jugglers.

The juggling teacher shapes attention first by breaking down the task of the cascade into manageable units, mini-tasks; secondly by calling attention to certain features of each mini-task; and thirdly through distracting a student's attention from irrelevant concerns such as performance anxiety. In both "calling attention to" and "distracting attention from," the teacher is inviting the student into an empathetic relationship.* In this relationship the student gets to make use of the teacher's habits of attention in encountering the material.

The goal of breaking down a task into mini-tasks is to present at each step only one new coordination. It is the new

*Which invitation a student may decline. One particularly good reason for declining such an invitation may be that the student is – himself – more interested in learning about his natural attentional processes than he is in learning "the material."

coordination which will demand attention until it is mastered. If a task is broken down sufficiently for a student, it will be obvious to him ***what he has to try for*** in each mini-task. This should never require verbalization by the teacher.

The goal of calling attention to certain features – such as posture and throwing style – is two-fold. It speeds the refinement process during the lesson so that the full lesson is not two days long. Also, it gives the student a vocabulary for his own use during practice time.

The goal of distraction and comic release is to dispel the excess tension and self-consciousness which accompany any intensive effort at training. When a student is noticeably embarrassed or tense, comic distraction and even playful mockery are often more useful than "heavy-handed" emotional support. A student who is embarrassed ***knows*** that what he just did is funny in light of what he ***meant*** to do. By laughing together about the ball that broke formation – now orbiting Uranus – the student and teacher come to stand together outside the as yet unserviceable behavior. The support approach sometimes leads to a student's remaining identified with a behavior over which he has as yet no control. This leads to his suffering some emotional distress. In order to aid in the dis-identification process, successful behaviors can also be noted somewhat comically; "Your wrist just learned that it should stay straight" rather than "you see, you have to keep your wrist straight." The ability to dis-identify has something to do with appreciating what juggling and mathematics are all about.

This approach to the process of formal instructions leads to some curious observations about the teaching of mathematics.

There is no place in juggling instruction for using recipe-style drill. The recipe approach in mathematics consists of directly telling a student how to go about solving a problem, ***what to try for***. In the juggling lesson this is circumvented by the use of a thorough breakdown into mini-tasks, and by the recourse to even smaller exercises should they be needed. While practice in mathematics is indisputably helpful to the student, the direct telling of recipes may be a hindrance because recipes influence skill-learning in an intentional rather than attentional way.

In addition to the dissemination of recipes, math teachers are known to students for the dropping of insidious hints. A "hint" is usually perceived by the student to be a recipe with the most important steps torn off. Problem-solving then becomes the hunt for the missing part of the recipe instead of an exercise in perceptive paraphrase. ("Is the missing part on the back of the test ditto? Is it written in invisible ink? Is it – dread upon dread – locked up in the teacher's mind?") Hints are a second poor substitude for the complete breakdown of tasks. In addition hints sometimes serve as pre-packaged substitutes for side-coaching.

Because side-coaching is an attempt to directly influence the attentional processes of the student, its effectiveness is dependent upon the active participation of the teacher in the student's efforts to master the material. It is guided as much by empathy as by the teacher's competence with the material; the tone and timing of remarks are as important as their content. It may be better at times to risk interrupting a student's concentration by giving spoken side-coaching than to give written hints which often miss the mark.

Mathematics is the science of articulating more than you thought you knew.

Problem-solving is probably the most basic and common form of mathematical activity. In the solving of algebraic problems, information is re-arranged until the "unknown" is expressed explicitly through "known" terms. Once this paraphrase is accomplished, there is no problem. The problem was only the inconvenience of implicitness.

As algebra is a linguistic medium for mathematical problems, juggling is a physical medium for problems of spatial arrangement. A popular "problem" of the cascade type is to have one ball trace a large exterior hemicircle while the other two trace a central figure eight, the usual cascade trace. A problem in juggling has for its solution the establishment of a particular arrangement of traces arising from a general pattern type. The traces of the individual objects are ***distinguished*** and arranged by the repeated use of variations of the basic defensive throw. (The potential for elaboration and variation in throws is inherent in the refined defensive throw. An analogous freedom to manipulate is gained by the formalized symbol "x.") Once the traces are arranged, there is no problem. The problem lay in the inconvenience of indistinction.

Another level of mathematical activity is modelling: the articulation of a few basic principles coupled with an open-ended enquiry into their consequences. The proofs of theorems which create new fields within math very frequently depend on modelling activity. Corresponding to this enquiry is the juggler's investigation of a set of constraints. A juggler may set out

to discover/invent everything that can be done with, say, three balls and a hoop.

A mathematician engaged in modelling is especially interested in classifying the types of consequences – "behaviors" – which arise from his chosen principles. Which of the model's behaviors arise in parallel ways? Which are reflections of each other? He has a faith that by noting these "aesthetic" relationships among the behaviors he will be led to deeper mathematical principles.

The juggler is equally attentive to aesthetics. He has a similar faith. He may be able to invent an effect which arises so ***simply*** as a variant of more familiar effects that it seems to have been in his repertoire all along, waiting only to be discovered.

It is toward the complete realization of what has first been glimpsed by the aesthetic intuition alone that both mathematics and juggling tend. In the moment of realization, simplicity can no longer be distinguished from truth – or ability – and paraphrase becomes creation.

I look at a suspended, frozen pattern and then down at my busy hands. I am wondering what this pattern is, unable even to describe it. My own hands are involved in generating the pattern, but *I* am not in control of their motions. They do out of refined habit what *I* could not will them to do. I am not aware of willing anything, now, and for the first time I notice the two honed circles traced by my hands resonating with the sideways eight of the juggling balls' pattern. I can see two "patterns" now, but which one has induced the other?

It is the same, I think, with mathematical knowledge and its instruments: we are participants in the abstract truths, and they bear a human brand.

The teacher instructs in juggling by presenting a set of tasks which lead step-wise to the cascade.

Each step ought to be savored a bit before the next one is attempted – otherwise there will be the feeling of difficulty and the buildup of tension will make attention impossible. A set of tasks for the cascade is listed below with annotations on what the teacher might side-coach to facilitate the learning.*

*When analogous approaches are taken in teaching mathematics, learning begins to feel sportive and artistic rather than constraining and dull. See **The Juggling Book** by "Carlo" for an extension of the juggling lesson.

A The first task is to throw one ball up and down, catching it in the same hand that threw it. (For convenience let's assume that it is the right hand, abbreviated R.H. from here on.) Repeat this twenty or more times with side coaching, and repeat for L.H.

SIDE COACHING: The teacher attends to the general state of the student, his readiness to learn, his relationship to the setting, etc. The teacher coaches the student into a playful state of mind, relaxed and attentive. He could point out tension in the student's body. Throughout the lesson he will call breaks whenever the student is overloaded with tension. Even 15 seconds is long enough for a break if the student relaxes completely for that 15 seconds. Clowning about the student's overzealousness or sense of inadequacy is useful, as is the reminder that "the body takes its own time." Ideally the entire lesson will have the feel of a series of explorations, so thoroughly absorbing in the present that neither the teacher nor the student is concerned about the overall goal of juggling three balls.

Verbally the teacher calls attention to the balls, their weight, the duration of flight, and the ease and automaticity of catching reflexes. Pointers are given on throwing from the center of the hand and being aware of body tension.

B **The next task** is to throw one ball back and forth between the two hands in an arcing manner.

SIDE COACHING: The teacher shapes the student's attention by having the student imagine the arc of the ball before each throw. The student could do this for the first several throws, and he is cued to relax and recenter between each throw by the teacher's assumption of a very centered stance. The techniques of recentering and "imagining first" cut down on overcompensation and the "widening gyre" which can result from individual erroneous throws.

The student is asked to notice when and where the ball peaks and to "feel the time" a thrown ball spends in the air. Lazy posture can be corrected most easily if the teacher either caricatures the student's posture or exaggerates his own – presumably alert – posture. The student who tracks the ball with his head is given a pointer on attenuating eye movement and head movement without losing the sense of where the ball is in space. The student who gazes blankly into the distance is asked what he is seeing there. The student is cued to catch as if his hands were paws, in the center of the hand.

C **The next task** is to throw one ball from R.H. to L.H., ***given*** the additional difficulty of there already being a second ball in the catching (L) hand. That ball, called "the garbage," is to be popped across the chest toward the opposite (R) shoulder. The garbage is to be "put out" when the incoming ball (from the R.H.) peaks. Repeat for the other hand.

SIDE COACHING: The teacher suggests that the student focus on the R.H. ball only, not on the garbage. The garbage pop should be "pre-programmed"; a "quick, blind burst of energy." Its only function at this point is to empty the L.H. for the upcoming catch, a defensive maneuver. If the timing here does not come naturally, an exercise is given: to throw one ball from R.H. to L.H. (no second ball) while counting "1" on throw, "2" at peaking, and "3" at catch. The second ball is then put back in the L.H. and the student is asked to pop instead of saying "2." The student should pay attention to the first ball and reliably catch it before moving on to D.

D **The next task** is the same as C except the student now tries to catch the second ball, the garbage, himself. Repeat this reversing hands. Repeat in sequence: starting with the R.H., then starting again with the L.H., etc. When this is fluid, it is called "vamping."

SIDE COACHING: Students often have difficulty because they are either attending to the second catch too early – thus failing to complete the first – or they attend to the second catch too late – and the garbage falls on the ground.* If either happens more than a few times, return to C with this variation: the student is to call out "4" after "3" in the same tempo as established by the "1," "2," "3." Next have him squeeze his R. fist closed as he says "4." As this does not require any attention to a ball, it does not interfere with the first catch or second throw. Return to D; the garbage is reclaimed on "4."**

E **The next task** is to throw a ball to the teacher (who stands facing the student) whenever the teacher throws a ball to the student. At first each partner has one ball. The ball is to leave the student's right hand whenever the incoming ball peaks. The student is expected to catch the incoming ball, recenter, and be ready to throw it back on the next round. The teacher times his throws to challenge the student into catching and readying more quickly. The student realizes juggling is an art of self defense. Repeat several times for each of the student's hands.

The teacher slips an extra ball into his hand at the start of working a round with the student's stronger hand. After three balls are juggled with this hand, the student's weaker hand is worked. Repeat several times for each hand until three balls can be juggled easily between the two half-jugglers on either side.

SIDE COACHING: Usually no verbal side coaching is needed from this point on. The teacher who follows the guideline of himself attending to whatever he hopes the student will attend to should find he has a very strong and attentive partner.

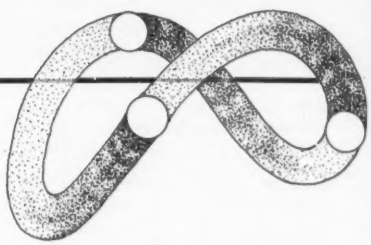
This portion of the instruction delivers the last little bit of magic: the student is learning an overall rhythm into which his juggling will fit. In addition he is learning to compensate for poor throws while reintroducing a minimum of error. That is really all the teacher ever did.

* Of these, attending too late is the preferred situation. If attending too early, the student is destroying the coordination established thus far out of worry for the new coordination. Taking a break might be useful.

** This is similar to many ***constructions*** in mathematics which serve first as place holders. Zero is – historically and psychologically – such a construction.

F The next task is to repeat the three-ball half-juggling exercise with student and teacher standing side by side. The teacher's right hand takes the place of the student's left hand and the student's right hand takes the place of the teacher's left. Repeat on the other side. Whoever is on the right starts the volley (begins holding two balls). Repeat with the teacher, on the left, ending the volley after exactly one cycle of the cascade. Repeat with the student ending the volley after exactly one cycle. Switch sides frequently.

SIDE COACHING: The overall duration of the single cycle will be felt if both student and teacher sing a note on each throw and the final catch – 4 counts in 1 - 3 seconds.



G The last task is to "juggle by himself," without thinking or planning. "Let your body show off from the elbows down." This is the first time the student has held all three balls; it is also the end of the instruction.

The new juggler realizes juggling is magic. He doesn't know how he did it, but has the feeling it was right – a rhythmic sense. This feeling is shared by the other, renewed, juggler. ■

by Ramón Sender Morningstar

ASHES

ASHES. The symbol of mourning. Scatter them in the garden for healthy vegetables. Aboriginal storytellers explain that stars are the scattered ashes of their ancestors' campfires. Mourning = morning. Star = *estrella* = *aster* = ash. Morning Star, my tribal name and totem. Ashes, the badge of humility of Hinduism. They have brought me far along the self-healing path and away from the periodic cycles of depression I have experienced all my life. This last summer, after a manic creative peak in June-July, the Dog Days of August bit the bottom out of my high and my psyche plummeted. I became restless, irritable, emotionally frozen. I rang up my unconscious mind for some new ideas but no one answered. Disgusted at my life, I slunk around the back yard with a beer in my paw, growling to myself. If that was how August went, September was far worse. I lost my unconscious mind's phone number and switched to hard liquor. Slump, Block and Cramp, the writer's triple-threat nemesis, rode on my back like an obscene baboon.

What is all that which you can call forth merely by saying, in an historical context, the word "Spain"? Whatever it is, I feel it in abundance whenever I'm around Ramon Sender. He was one of the leading innovators in tape music in 1965, when he and I collaborated on what became a celebrated event, "The Trips Festival." A few months later he was with ex-Limeliter Lou Gottlieb founding Morningstar Ranch north of San Francisco – the most wild and most wooly of all the hippie communes. When Morningstar was finally shut down and bulldozed by the county, Ramon made the transition to its successor, Wheeler Ranch. In recent years he has been generating a vast body of unpublished writing, trickling some of it past me.

Here, reader, drink this. Say "Spain." Say it again when you've finished. *–SB*

For the previous year I had been having bi-monthly hypnosis sessions in an all-out attempt to remember my traumatic early years in Civil War Spain. Buried under two language changes and a number of foster families lay the festering memories of the time around my second birthday when I lost my mother. I turned out to be a lousy hypnosis subject, incapable of reaching much depth, but the psychologist and I became good friends. And I appreciated the post-hypnotic suggestions he gave me concerning my writing. We continued to work together and my trust for him grew. An intermittent communications channel to my interior opened a crack. It was like hearing a voice fading in and out on a vintage crystal set sizzling with static. Then last week he put me into light trance and suggested to my unconscious that it "give me a present." I returned home, little knowing what a tremendous gift I was about to receive.

The following day I couldn't stand it any longer. Liquor was no help, hypnosis was getting me nowhere and, as for my writing, the wellspring of inspiration from which I had drawn daily buckets of solace had dried up to where I could only grunt out a few pages a day with the greatest of efforts. My imagination was growing hemorrhoids. So

Ramon and his mother, Amparo, in Spain, 1935.

I jumped in the car and lit out for the big city to score the one chemical that had helped (!) me before – PCP, or Angel Dust as it has been euphemistically nicknamed. It rots your brain and sends countless numbers of young people over the edge of sanity every year. Why, you may ask, was I so determined to destroy my mind? At that point I could not have answered you except to say I was looking for some psychic dynamite. To top it off, I was extremely sensitive to the substance. Two years earlier I had come to myself in Mt. Zion Hospital after four hours out of my mind on a PCP overdose. Although it had almost destroyed me, I had enjoyed a clarity and elation for months after. Did it affect everyone the same way? As far as I could tell from the literature, PCP was a very unpredictable drug. For some it was an aphrodisiac. Junior highschoolers were the heaviest users, presumably for the hallucinations it offered at a cheap price – cheap unless you included the cost of obliterated brain cells.

I returned home, toked up and zonked out. A hot September afternoon lay on the hillside like a gravid buffalo. I lay under the semi-shade of the tickbush – wild lilac, I preferred to call it – and watched the sun turn the leaves into a fiery plasma. Ecstasy! By suppertime it had worn off, but when my wife Debbie went to bed I was too restless to accompany her and returned to my study for a late night at the typewriter. Needing a little altitude, I toked up on PCP again. Whoom!

The next thing I remember I was lying on the couch in the living room, Debbie beside me. I was caught in some sort of repetitive spasm, my right arm jerking over and over again above my head.

"Yo," I said each time. "Yo."

It was a spastic, tic-like gesture, as if my hand was attached to the top of my head by a rubber band. Yo-yo, I thought. I've been yo-yo-ing away all my life as the human yo-yo and this is the first time I've ever seen it. I'm a freaking freak!

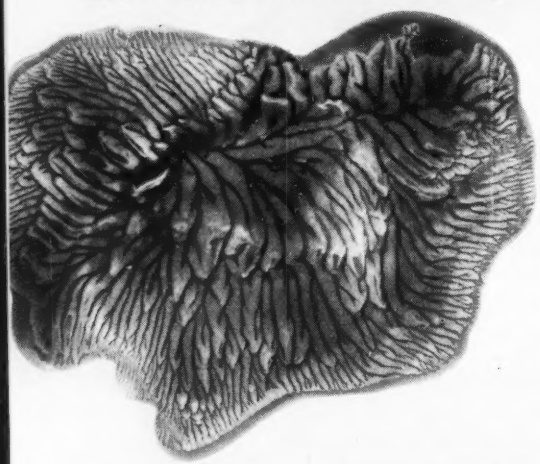
"Wow! I've never seen that before," I whispered in growing horror and amazement.

"You've never seen that before," Debbie echoed, a time-tested counseling technique.

Just then the door opened and in walked my dear friend Steve. What was he doing here in the middle of the night? I got up and stared at the kitchen clock. Three A.M.! Where had five hours gone to? My God, I had "fugued out" again and scared my woman to the point where she had to phone my friend! What an asshole I was! To whammy myself into states so crazy that I couldn't even remember them and terrifying

Debbie into the bargain. I began apologizing to both of them profusely.

We sat around and talked for a half-hour until I convinced both of them I was all right, and Steve drove home. I followed Debbie to bed and lay staring at the ceiling, experiencing the most intense hallucinations of my life, and I'm a non-hallucinator. I felt I was traveling into the most central part of my brain, up the optic nerves through the portals of the pituitary. Off in the distance I saw a hairy ellipse with an eye in the center – the one-eyed Cyclops – or was it a mouth? It floated closer and closer. I shut my



eyes and still saw it. There was no terror, only an amazed wonder at my body's ability to conjure up strange images. What part of myself was I seeing? It approached even nearer until it was subjectively about a foot away. I studied it. It was an elongated, paramecium-shaped hairy disc with a nodule in the middle, puckered up in some strange manner. It hovered at nose-tip level and then suddenly I passed through it into a fairyland of dancing, blue, elongated houris, the female enchantresses of Moslem paradise. Their edges were constantly melting and scattering into nothingness. At last! Not only two-way audio with my unconscious but color video as well!

I don't think I slept. The following morning I felt very ashamed of myself. I was as manic as a prizefighter before a bout, feinting and shadow-boxing with mental explosions and grandiose schemes. Everything was too serious, I decided. We should all live in Sillyland, U.S.A. I would become Zero The Clown and play the Hungarian Rhapsody on the concertina while I rode a unicycle. What a good back-up career while I waited to be published! I drew a sketch of my costume and called a bicycle shop.

Around four o'clock that afternoon the houris turned into The Furies as the basilisk cyanide, to which PCP is related, was unlocked in my system. My self-congratulatory mood dissolved when I noticed how sensitive I was becoming to sunlight. Restless and hot, I ate a couple of tablespoons of dolomite (magnesium and calcium) and lay down in the shade. The discomfort kept increasing geometrically and I began chewing up Vitamin Cs as quickly as I could, my body grabbing them off my tongue and screaming for more. Debbie left to search for her brother, our local healer, as I started having trouble breathing. My cells were not getting oxygen. I began panting and threw off my clothes. My unconscious telegraphed the technical term "anoxia" and I started hyperventilating. A tingling sensation began in my hands and feet and I began to get worried. I panted harder and headed for my reference books. The tingling increased to trembling and the trembling into paralysis. I was turning blue while I flipped through anatomy books and herbals, looking for a cure to anoxia. When the paralysis hits my diaphragm I won't be able to breathe and I'll die, I thought. This is it! Goodbye, world! God, what a way to go, crouched naked over three open books. My body was doubling over into the same tetanic convulsion lockjaw inflicts when the phone rang. I managed to grab the receiver.

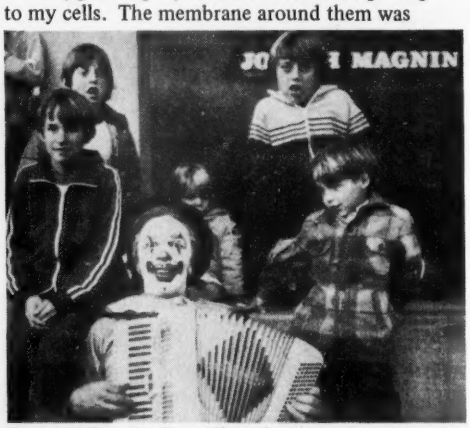
"Huh-huh-loo?" I panted.

It was Sandy, our Tai Chi teacher.

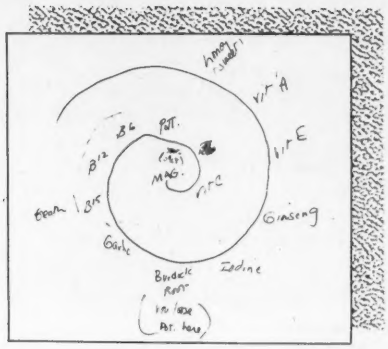
"I'm dying," I croaked, and described what was happening in between huge whooshes of air.

"You're doing the wrong thing," she said. "Empty your lungs and then breathe slowly. Calm down."

I obeyed and immediately felt the shaking and paralysis begin to ebb away from my vital centers. She was right! I had been doing exactly the wrong thing! What was hyperventilation, I wondered. I was oxygenating my blood but it wasn't getting to my cells. The membrane around them was



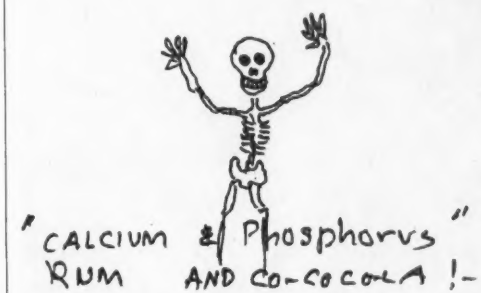
Ramon as Zero the Clown these days.



impenetrable for some reason. A sudden wave of coldness washed through me and I ran to draw a hot bath. Another mistake. The minute I submerged myself I felt I was suffocating. My skin needed to breathe. So I wrapped up in blankets with every vitamin and mineral in the house in front of me in a semi-circle and started to psych out my malaise. Magnesium-calcium for the hot flushes, Vitamin C and potassium for the shakes, then B_{15} to help my cells breathe and B_6 to help me absorb the magnesium. Iodine. Iodine was an antidote for cyanide poisoning I had read somewhere. My thyroid was desperate for it! All I could find in the house were kelp tablets and some dried seaweed, so I began crunching the brittle strands in my teeth. My kidneys were aching – no, it was the adrenals right above them – ooh! They were swollen up like sausages. What was good for adrenals? Ah, garlic! I munched down two cloves and the swelling subsided. Lots of liquids. A peeled cucumber tasted delicious but by then I was blowing off carbon dioxide again in puffing exhales and heating up. More magnesium-calcium and then all the way around the circle I went. B vitamins and potassium, Vitamin C, garlic, cucumber and liquids. More kelp for iodine again. What was going on? I couldn't seem to balance out. My tongue became sore and I took the appropriate B vitamin. God bless my tongue! It was telling me what I needed and absorbing things into my bloodstream so quickly! I was chewing all my pills so I could "taste" their effect on my body.

All that night I was on a merry-go-round, dancing a Danse Macabre with a grinning skeleton. In the morning my thyroid had settled down to a steady ache for iodine. But I was getting the message that the salt in the seaweed was contra-indicated. It triggered the hot flushes which then required the whole cycle of pills. I needed iodine – pure iodine – and there wasn't any in the house. At sunrise the depression hit. Ooh, the worst I'd ever experienced! Paranoia first and then tears and sobs. I was ruining everything good and pure and wonderful in my life. I sat down and wrote up a list of promises. No more tobacco, no more alcohol. I would clean up my addictions, learn my clown act and get my shit together before the neighbors turned me in. Like Nebuchadnezzar, I saw the writing on the wall. There was just barely time – maybe – before complete disaster – to put things into shape. Weeping, I woke Debbie to tell her everything. But I still needed iodine. I felt like I had been karate-chopped in the throat.

A friendly goat-lady up the ridge had a bottle of strong iodine tincture she used for dipping the umbilical cords of newborn kids. I drove up and whiffed the fumes from the uncapped bottle. Ah, absolute ecstasy! Just the smell sent shudders of delight through me. She poured me off a small amount and I returned home with it and dripped a few drops in water, sipping at it as if it was the elixir of life.



That night I slept better but awoke around three a.m. with the old song "Rum and Coca-Cola" running through my dreams. The skeleton was back again, singing

> Cal-cium and phos-phor-us
> Are what is good for us
> Else we will turn to dust
> Cal-cium and phos-phor-us.

I got up and chewed a few bone meal tablets and some liver pills. My bones were complaining. At least the communications channels were wide open, I thought. A huge block had been removed. But something kept bothering me. What had been that strange, freaky incident that first night, that spastic jerking and that "yo" word I had kept saying? Early that morning I asked Debbie about it.

"You said something like 'I never saw that before,' " she said.

"I saw myself as some sort of terrific freak," I explained. "It was as if my hand was attached by a bit of elastic flesh to the top of my head and whenever I said 'yo' it snapped in the air. Yo, yo, what does it mean?" I thought for a moment. "It's 'I' in Spanish." I started repeating it over and over. "Yo, yo, yo-no something." What was the

phrase my unconscious was yammering at me? And then I had it. *"Yo no quiero ir, yo no quiero ir!* That's it! That's it!" I shouted. "Now I understand!"

Debbie was gauging my sanity with a guarded eye. "Are you all right?"

"I just remembered what happened to me the night my mother was arrested," I said. "That phrase – *'yo no quiero ir'* – is the key!"

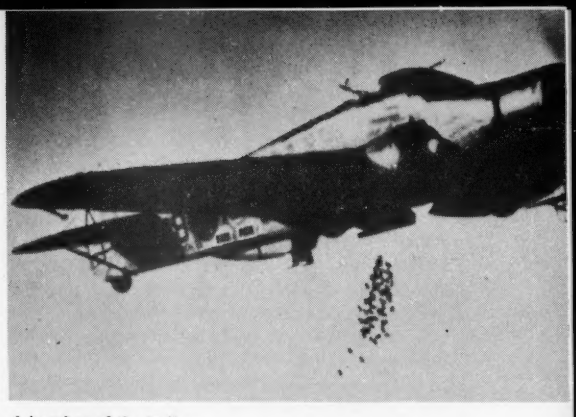
"What does it mean?"

"I don't want to go!" I translated. "Oh my God, now I see it all!" I grabbed her hand. "You see, it all started back in mid-July of 1936 when the

Barcelona, July 19 - 20, 1936.

Spanish Civil War began. Some of this I've heard from other sources but now I see the complete picture. We – that is, my father, my mother, sister and I – were in a little mountain village outside Madrid for the summer when, in a series of coordinated uprisings, fascist-monarchist elements in the army captured a number of towns. The larger cities stayed firmly loyal to the Republican government, but as the fighting neared Madrid and the little village where we were staying, my father and mother decided that the safest thing would be for her to take us to Zamora, her home town near the Portuguese border. From there it was an easy journey across the frontier in case things went against the Republicans. My father returned to Madrid to get some necessary clothing for us and also to make preparations to join an artillery battalion.

"While he was gone, the battle lines came close enough to the village to terrify my mother and she decided, after one nightmarish bombing-

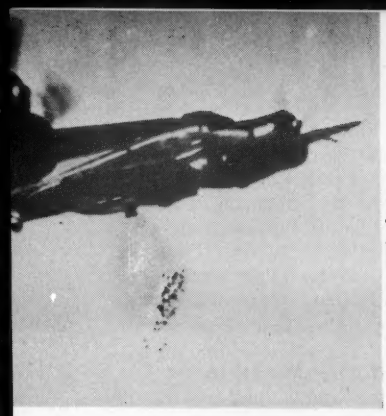


A bomber of the Italian Legion bombs Republican troop positions.

strafing attack, to leave with us at once for her home town. We took one train as far as Medina del Campo where we had to wait to change to another. She decided to telephone our father in Madrid to let him know of her change in plans. Unbeknownst to her, Medina del Campo was in the hands of the Fascists and she was phoning across the battle lines. All phone conversations were being monitored and it wasn't long before soldiers arrived and arrested her as a spy. Somewhere during this incident I was hit in the lip and still carry the scar. It was from this moment that I conceived a terrible fear of soldiers and uniforms, understandable under the circumstances. My sister was a six-month baby at that time. We were taken to jail but released a few days later through the good graces of my mother's parents, who were Monarchists and vouched for their daughter's integrity to the fascist police. Luckily they did not know that she was the wife of a well-known radical author-journalist or she would have been shot on the spot. So this first time she escaped and we continued on to Zamora where, for anonymity's sake, we stayed outside of town in a small cottage with one of her brothers.

"A month or so later, Zamora fell to the Fascists in a surprise coup and her brother panicked and crossed the frontier into Portugal. Escape was

Ramon, age 3, 1937.



Ramon and Amparo's route from Madrid.

The Ancient Art of Warfare

National Geographic Atlas of the World

not so easy with two children and she decided to apply for visas for the three of us. Her application was scrutinized by suspicious Fascist police who wondered why she was so eager to leave the country. It was a small matter to ask around the town and find out she was the wife of a noted 'Communist' writer. That tore it. Late that evening, soldiers were dispatched to our cottage. Bang bang bang! They pounded on the door.

" 'Open up! Open up!'

" 'What is it?'

" 'Amparo Barayon Sender?'

" 'Yes?'

" 'We have orders for your arrest. Come with us.'

" 'But my children –'

" 'Wake them and bring them along. Come on, come on, we haven't much time.'

"I awoke to voices and stared in growing fear at the uniformed men carrying rifles.

" 'Hurry, we must go,' my mother whispered, trying to dress me.

" *'Yo no quiero ir!* I screamed. *'Yo no quiero ir!'* I remembered our last encounter with soldiers all too well. Still yelling, I threw myself on the floor and pounded my arms and legs. *'Yo no quiero ir!'*

"My sister in her arms, the soldiers hustled her towards the door. She must have begged them to carry me but they only shrugged and laughed. She was a hated Communist. Why should they do anything for her? She must have pleaded with them not to abandon me – to send someone up to the cottage – but instead I was left there all night by myself, screaming and throwing tantrums. Towards morning I fell asleep only to awaken hungry and depleted. I got up and went to the fireplace and ate ashes from the grate. Heavy stress drains potassium from the body, so I was instinctively doing the right thing. A little after sunrise the housekeeper arrived. She probably hadn't heard about the arrest and was dumbfounded to find me there alone and the house in disarray. Putting two and two together – there must have been many already jailed in town – she answered my questions about my mother as best she could.

" 'She has gone away,' she said. 'She will come back.'

" 'I want her now!' I bellowed.

" 'She has gone away on a train to Madrid and will come back with many presents for you.'

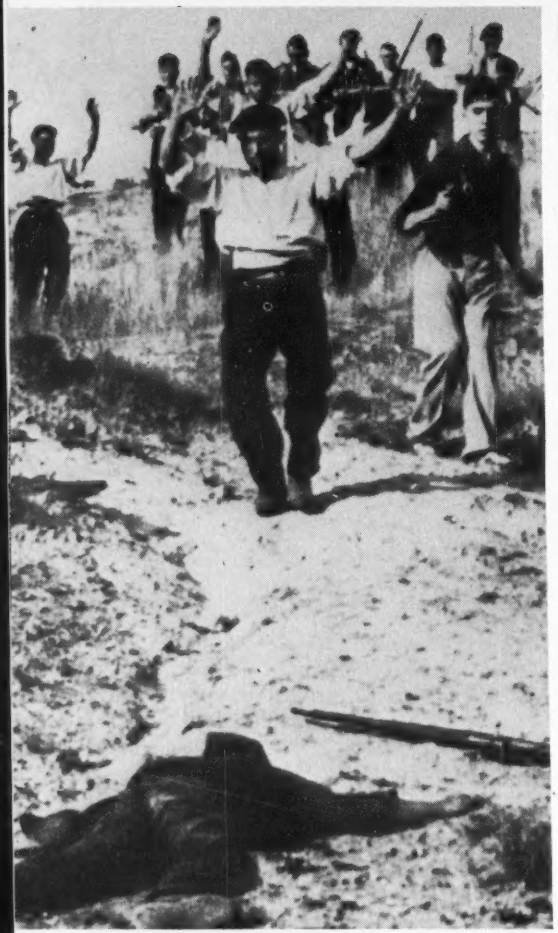
" 'I don't want presents!' I screamed.

" 'Come, little one, you must dress and go with me to my house. You will like it there. I have a pig and a goat and a – "

" *'Yo no quiero ir! Yo no quiero ir!'*

"Probably she had someone carry me kicking and screaming to her house. She would tell my mother where I was, she insisted. My mother would know where to come and find me.

"With Zamora in the hands of the Fascists, there were many arrests of Republican sympathizers. My mother's other two brothers also went to jail



Republicans surrounded by Franco's troops.

in spite of their parents' connections and were shot. The incredible horror of civil war, that turns brother against brother, decimating families, with the constant paranoia of who will turn you in! Who is the spy? Who a friend? Even I had denied my mother in her hour of need. Somehow at that tender age enough Catholicism had seeped into me. When the roosters had crowed at dawn that terrible morning even they mocked my cowardice.

" 'Cock-a-doodle-do! *Yo no quiero ir!*' "

I stopped for a breather and a glass of juice. The pieces of the jigsaw puzzle were fitting into place some forty-odd years later. The plug of trauma and distress, buried under English and French, my two foster languages, had loosened and melted away. Memories were thundering into consciousness that had been submerged for so long! I took another sip and continued.

"My mother was given some sort of military trial and shot by a certain Enrique Viloria, may God have mercy on his miserable soul, on November 16 after some three months in jail. They had taken my sister away from her the day before and, intuiting that her death was not far off, she had smuggled a note in the baby's clothes for my father which read, 'for myself, I do not care if I die because I die for you. But the children. What will become of the children?'

"It took four months for my father to receive word of her death at the front with his artillery battalion. He applied for leave and went to France to appeal for help in finding us. The Red Cross Director himself, according to one story, drove across northern Spain to Zamora. He found my sister in a convent orphanage (why there and not with my mother's parents?) At the old woman's farm they also found me and told me they were taking me to my father.

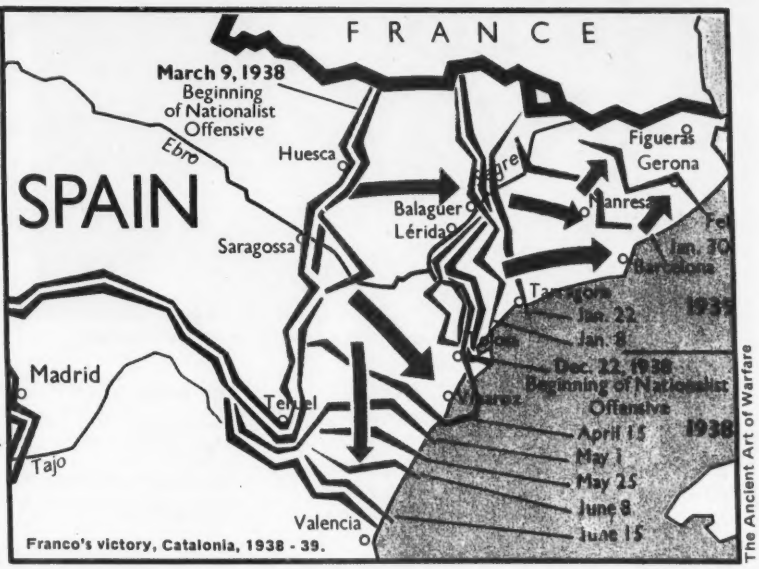
" *'No quiero ir! No quiero ir!'* I screamed and threw a tantrum.

"My ability to throw tantrums had grown with practice and I could now perform with great virtuosity. In fact, I would go into near convulsions which scared the old woman so much that she had gone to my grandparents who arranged for me to see a psychiatrist. I think he gave me some sort of shot which of course triggered a fresh outburst. Anyway, the sight of my little sister Nena in the ambulance convinced me I should go. I was so happy to see her again! She was like a little piece of my mother given to me once more and I could not caress and hold her enough.

" *'Mi Nena, mi Nena,'* I would say over and over while I kissed her.

"In France, another great joy awaited me – the reunion with my father, although tempered by guilt at the way I had not stood up for my mother, especially since Papa had told me to 'take care of her' when he left for Madrid. This guilt-cowardice thing has been like a wall between us all these years, I see now. Anyway, he took us on an airplane to Barcelona and the house of our Tia Maruja. Of all the cities, Barcelona seemed the safest, defended by the strong, nationalistic Catalonian workers. Red-haired Tia Maruja took us in with open arms, her own husband Guillermo away fighting for the Republicans. We must have spent about a year there with her, living through the terror of the might of March 16, 1937, when Mussolini's Majorca-based bombers began a series of eighteen raids on the city spaced over the next three and a half days. It was the first saturation bombing of a city in the history of mankind and a terrible portent of what World War II would bring to Europe. The Fascists employed two new types

of bombs, the first designed to pass through the roof before exploding inside the building. The second type exploded with a strong lateral force and sent a deadly hail in all directions a few inches from the ground.



"With an international arms embargo on military supplies to the Republicans, their cause faltered in spite of the heroism of the people. When the situation worsened, our father took us out of Spain again and placed us in a children's refugee camp in Durremont near Bayonne. My God, it's unbelievable the way these names jump out of my unconscious! We were in the camp for the winter of 1937 - 38 during which Nena contracted pneumonia and was very sick. My father must have left Spain before the final surrender (which was after the fall of Barcelona in '39) because it seems we joined him in Paris in the spring of '38.

He has told me we lived there with him and a woman named Elizabeta for about a year. I have no recollection of her at all or of that time. He was writing for a Spanish refugee journal, attacking both the Fascist Right and the Communist Left whose betrayal of the Republicans in a number of instances had outraged him. Before long, both sides were out to silence him permanently and by the spring of 1939 it was obvious he would have to flee for his life. Luckily he had a diplomatic passport from a previous visit to America on a fundraising tour and was able to grab my sister and me and get on a boat for New York City.

"After a two-week stay in Greenwich Village with the family of a **Time** correspondent friend of my father's, we were transferred for health reasons to the country home of an American family where a loving American mother added us to her flock of waifs. We began to forget our Spanish and Spain and to learn English and play American, absorbed into the suburban New York children's community. My father became a peripheral figure in my life from his hermitage in Mexico, finally more of a warrior-uncle to be admired from afar. Sharing time together stirred vague discomforts in both of us. He was so sensitive to the damage I had suffered and, in turn, I was riddled with guilt over having failed him somehow at two years of age."

I sighed and smiled at Debbie. "Sorry to put you through such a cataract of words." The pillows looked inviting and I laid back with another sigh.

What an outpouring! My dates might be a little off but the flow – the continuity – felt right on. How amazing is the human mind! Everything for which I had been searching had been there all along, locked up somewhere deep inside.

"Months turned into a year and we were her children to all extents when our father came back from Mexico for a visit. 'What is that funny man saying – gobble-gobble-gobble?' Nena asked when

Ramon's father, 1976.

"My sister takes her life profession vows." 1979, Convent of St. Helena (Anglican).

her father spoke to her in her mother tongue. I felt the same way. Spanish and all things Spanish including my own father, stood for something painful and full of distress. I wanted nothing to do with Spanish. I wanted to be like my new American friends. I wanted to be an American and salute the flag and say the Pledge of Allegiance with pride and fervor for this great, green, peaceful country and my new Tia whom I had grown to love so much." I laughed suddenly. "I just thought of how my hypnotist's suggestion to my unconscious has been more than fulfilled. I've had a moving van full of presents delivered with a big red bow! UPS, door to door!"

A day or so later, at another session with him, I went over the whole story again, filling in more details I had remembered.

"Watch this," I said. "*No quiero ir, no quiero ir, noquiro ir, noquiero ir,* no career. No career – that's been the story of my life! And this soreness I've had for a few months in my right arm and elbow – it's from pounding the floor as a child.

And know what?"

He grinned at me from behind his moustache. A friendly sort, this shrink. "What?" he asked.

"I'm healing myself! Want to know my diagnosis?" I flipped a page of my notebook. "Early childhood chorea brought on by a traumatic loss of mother with ensuing potassium deficiency. An inherited low-thyroid tendency due to a difficulty in metabolizing iodine. I need a lot of Vitamin E. Anyway, the iodine thing complicates matters with periodic attacks of myxedema, which crying and tantrums helped dissipate."

"What's myxedema? What's chorea?"

"Myxedema's the classic depression and chorea is the quakes and shakes and burps and farts. Of course the cure I followed was unusual, to say the least, and I don't – repeat – do not – recommend the PCP part of it to anyone. I will never take it again. I now have a better way to open up communication with my unconscious. And the call letters are hidden in my mantra: *no quiero ir, no quiero ir.* The first letters are n-q-i. N-q-i-n-q-i equals new key. It's the new key to my unconscious. Also 'nukie' – isn't that baby talk for 'pacifier'? Also, how about 'nukey' for the little atom bomb it took to blow that impacted shit outtathere?"

"Ramon, you're fantastic," he said. "You've really gone and done it!"

"With a lot of help from my friends and loved ones," I said with blushing modesty.

I returned home at peace with myself and in harmony with God's sweet creation. And this is a good place for me to stop. Let me just add that I have had a number of conversations with my father over the phone and our relationship, terrible for years, has blossomed into something precious to us both. I'll be visiting him in about a month and expect it will be a peak experience in my life.

I'm so thankful that I didn't have to wait for the death experience to remember all this material. I still have half of my life to push ahead and forge a career using all my talents. As for my writing, I can now see why my novels haven't found a publisher. There was a frozen undercurrent which kept me from creating depth for my characters. They were all out of touch with their unconscious! Instead of eliciting empathy, they skittered about on the surface of their lives unable to dip down under. I've got a file cabinet full of stuff to rewrite one more time but then I'm sure it will be published. At last everything is green-light GO!

Maybe in another ten or twenty years I'll be ready to write the full story of those early years in some sort of meaningful fashion. It will take a trip to Spain first. By the way, my last name "Sender" means "path" in Spanish. Sender-sender-cinder. Path of Cinders. *Sendero de Cenisas.* Path of Ashes. The Milky Way. Hey, how's that for a name! Grandma Hattie Galaxy! Hear me out there, your million of light-ears away! Here I am, your great-great-great-great-great-great-great-great-great-great grandson yoohoo-ing at you on a tiny planet way out on one of your spiral arms! *Que barbara, esta anciena!* ■

Summer '80 Financial Report
CoEvolution Quarterly —

EXPENSES	Feb,Mar,Apr (Predicted)	Feb,Mar,Apr (Actual)
Salaries and fees		
Office	$ 18,000	$ 19,846.05
Production	9,000	12,035.77
Editors	9,000	13,018.78
Contributors	7,000	4,633.00
Office rental, materials, etc.	12,000	15,857.43
Phone	1,000	1,197.08
Promotion	2,500	5,662.42
Printing	36,000 (50,000 copies)	33,346.97 (50,000 copies)
Subscription process and mail	14,500	14,517.05
Shipping	1,500	1,590.77
Business reply	700	700.00
Refunds	300	500.00
Total	$111,500	$122,905.32
	Unit cost (printing): $ .67 Unit cost (total): $2.46	
INCOME		
Subscriptions, gifts and renewals	$ 53,000	$ 58,517.09
Retaining & Sustaining	5,000	3,990.00
Back issues	4,500	4,074.50
Distribution	20,000	20,808.77
Total	$ 82,500	$ 87,390.36
NET GAIN OR (LOSS)	($ 29,000)	($ 35,514.96)

'Or Whole Earth Household Store'

That phrase under the access of an item in the CQ *means that you can mail order it from:*

Whole Earth
Household Store
c/o Zen Center
300 Page Street
San Francisco, CA 94102

Note: Please add $1 to any order to cover shipping and handling. Add 10% to foreign orders. Inquire for UPS or Air Mail postage charges. Anything other than items so listed — orders for books, maps, etc., published by CQ *or letters, material for the magazine, subscriptions, contributions, complaints, — should be sent to:*

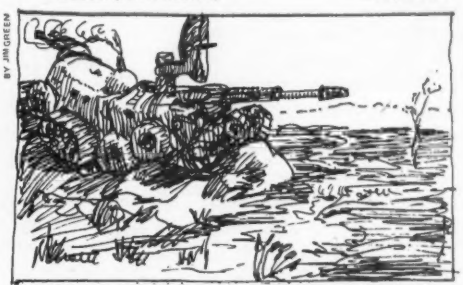
The CoEvolution Quarterly
Box 428
Sausalito, CA 94965

POINT Financial Report

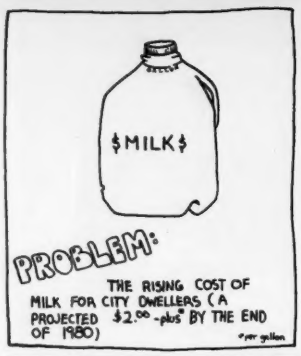
	PAST QUARTER Feb,Mar,Apr 1980
CQ (detail above)	
INCOME	$ 87,390.36
EXPENSE	122,905.32
CQ Books	
INCOME: Direct mail-order	1,548.00
EXPENSE: Products and mail order supplies	719.88
Last Catalog & Epilog	
INCOME	
Penguin-Viking	5,033.94
Direct mail-order	1,190.74
Next Whole Earth Catalog	
INCOME	—0—
EXPENSE	
Production & mail-order supplies	25,780.47
Maps, posters, II Cybernetic Frontiers, Marbles, Postcards	
INCOME	4,262.30
EXPENSE	2,456.50
T-Shirts	
INCOME	1,861.50
EXPENSE	1,812.48
Miscellaneous	
INCOME: Point, Miscellaneous	637.36
EXPENSE: Point, Miscellaneous	1,919.56
TOTALS	
INCOME	$101,924.20
EXPENSE	155,594.21
NET GAIN (LOSS)	($ 53,670.01)

POINT Balance Statement 30 April '80

ASSETS	
Cash in bank	$ 26,148.23
Investments	*29,774.57*
Accounts Receivable	
Distributors	33,251.53
INVENTORY	
Back issues, CQ	*180,900.10*
Maps, posters, marbles, II Cybernetic Frontiers	2,749.25
Mail-order CQ books	*893.75*
Pomegranate Inventory (posters)	1,650.00
Miscellaneous	
Paper at Waller	*11,388.00*
T-Shirts	3,533.12
LIABILITIES	
Accounts payable	—0—
Subscription liability	*235,980.00*



"Lili" the esoteric war machine pauses to reflect on the wonders of spring sometime in the near future.



Thank you

Maniacal Subscribers ($1000)

Bamboo Flying Water
Bristol, Vermont
Donna Boyd & Gene Combs
Lexington, Kentucky
Marlon Brando
Beverly Hills, California
Stephen & Julie Briggs
Centreville, Virginia
Robert Dunn
Scottsdale, Arizona
Allan Hogle
Gualala, California
Michael O. Johnson
San Clemente, California
James E. Lovelock
Launceston, Cornwall, England
Norman Pease
Orinda, California
Greg & Pat Williams
Gravel Switch, Kentucky
and Four Anonymites

Sustaining Subscribers ($100)

Joshua Arnow
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Wendy & Joel Bartlett
Los Altos, CA
T & M Bayard
Wilmington, DE
Alex Bornstein
St. Louis, MO
Mrs. Arthur Brand
Rockford, IL
Mike Bunis
Nashville, TN
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Providence, RI
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Bob Fuller
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and three anomalies

Retaining Subscribers ($30)

Ronald B. Adams II
Washington, DC
George K. Allen
Dallas, TX
Marvin Anderson
Eugene, OR
Steven Bagley
Merion, PA
A & B Banner
Beverly Hills, CA
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Edward Still
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Cambridge, MA
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Wiemeyer
Paradise, CA
David Wolcott
Washington, DC
and 3 Anonylites

CoEVOLUTION Quarterly

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Office Manager
Andrea Sharp

Assistant Editors
Richard Nilsen, Stephanie Mills, Anne Herbert

Soft Tech & Nomadics
J. Baldwin

Land Use
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Next Whole Earth Catalog
Art Kleiner, Mimi Abrams, Jeanne Campbell, Tom Schneider, Marilyn Langfeld, Patricia Masters Nancy Dunn, Lynn Spigel Isabella Kirkland, Liz Fial

Library
Ben Campbell

Typesetting
Evelyn Eldridge-Diaz, Kara Adanalian

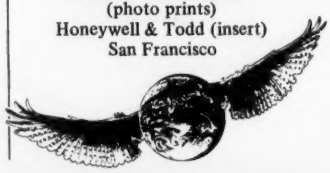
Art Department
Kathleen O'Neill, David Wills Don Ryan (camera & maps)

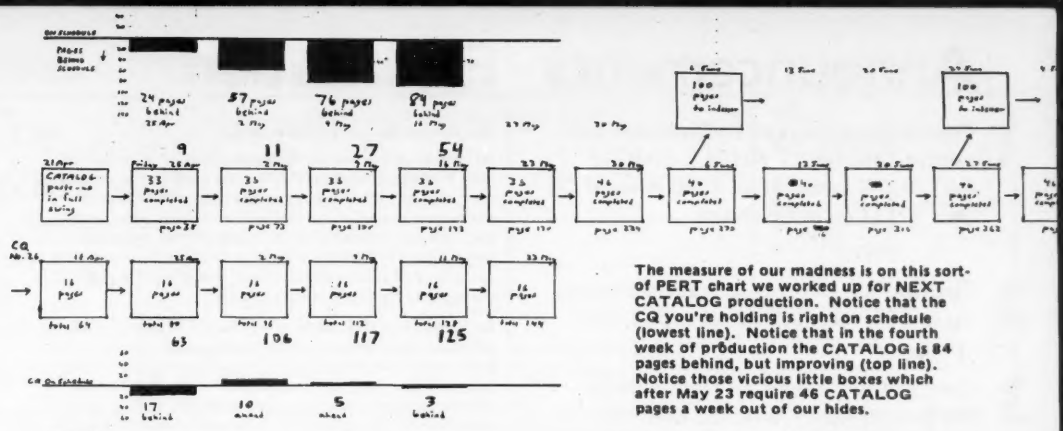
Illustrations
Tom Parker, David Wills, Kathleen O'Neill, Don Ryan, Andrew Fluegelman, Michael Phillips

Subscriptions and Back Issues
David Burnor, Dick Fugett, Lorrie Gallagher (& booths) Jonathan Evelegh (& printers)

Mailing Services
Mailing Management, San Francisco
Mailing List Services, Berkeley

Printing
Warren Waller's Press, San Francisco
A.L. Lemos Co., San Francisco (bindery)
Glue-Fold Co., Menlo Park (envelopes)
Marinstat, Mill Valley (stats and halftones)
Chong Lee, San Francisco (photo prints)
Honeywell & Todd (insert) San Francisco





The measure of our madness is on this sort-of PERT chart we worked up for NEXT CATALOG production. Notice that the CQ you're holding is right on schedule (lowest line). Notice that in the fourth week of production the CATALOG is 84 pages behind, but improving (top line). Notice those vicious little boxes which after May 23 require 46 CATALOG pages a week out of our hides.

Gossip

Boy, is this place pregnant.

Andrea, the petite manager of us all, is due November 27 (Thanksgiving – "It's going to be a turkey"). Evelyn – last time she was pregnant was while typesetting **The Last Whole Earth Catalog** *in 1971 – is due December 19. And the office in general – swollen with nine new people helping on* **The Next Whole Earth Catalog** *– is due August 31. (That's just the* **Catalog** *negatives, when our delivery is done. Printed books come out in October.)*

How intense is it getting out 6 - 10 pages every day? Production, editing, and research people are here most evenings and most weekends. With two shifts on typesetting, the machine hardly ever cools. None of us have private lives or social lives left worth mentioning. For lack of a life, Anne notes, we've gone in for dressing weird – her tie, for example, sports a paper dollie with staples in its head.

The issue that Anne Herbert was to guest-edit has been postponed from Fall to Winter 1980, to her and everybody else's enormous relief. You get the **Next Catalog** *instead – see p. 144. Also a large portion of her* **Rising Sun Neighborhood Newsletter** *is being serialized in the* **Next Catalog** *as* **Divine Right's Trip** *was in the* **Last Catalog.** *One section of* **Rising Sun** *you won't see in the* **Catalog** *because it's too personal is not too personal for good old gossip. It goes:*

David Wills talking on the phone said, "It's not such a good time to visit, you know, because we're making this 600 page book and there are all these people going around with words in their heads, and if they see a new face, they forget the word and have to find it again on a little piece of paper."

Some slogans of the **Next Whole Earth Catalog** are, "Hmm." "If we'd started this six weeks ago . . ." "By next week we should know how bad it's going to be . . ." "In three days it's going to be great." "The system basically works but right now I can't find . . ." "I'll have to call them on that tomorrow morning but the other one's coming in the mail." "Do you think it should be National Technical Information Service or NTIS in the access?" "I've got two more pages done, all you page fans." "We have a new pile, Art." "I already did it, Anne." "Is this a caption or a quote?" "This spread is done." "I'm done pasting this spread, Kathleen, is there another one ready?" "Do you think it should be G.E. Hutchison, G. Evelyn Hutchison, or George E. Hutchison – it's all three ways on this page and there are two items called Environmental Conservation, a book and a magazine, do you think we should make a distinction in the headings and why does the access say England sometimes and United Kingdom other times and why don't these pages have section headings yet and why is all this stuff six instead of eight?" "I think it's time to leave. I'm not sure if I'll be back." "These must be all those books from Houghton Mifflin that we don't need because it's too late."

"Is something wrong with ———? S/he seems a little ———!" "No, just temporarily in touch with the enormity of the task."

Since Steph's assistant editor, sometimes she gets to tell people to not stop by, we're a little busy, and the other day when she turned down a guy who wanted to stop by, had been reading the **Catalog** since he was knee high to a solar collector and wanted to bring 16 friends with him, he wrote this note in reply, "The itinerary was a temporary one – If Stew Brand cannot handle an existential gathering of individuals who are authentically interested in and living his work, then it's his loss and our loss also – net gain, ground zero – "

Art Kleiner, noting how one particularly difficult body of material was straining everybody in succession – research, editing, typesetting, proofreading, and paste-up – commented, "Now I understand how a rat moves through a snake."

Another one from Art,

1980: The Next Whole Earth Catalog
1981: The Beatles Reunion
1982: J.D. Salinger's Next Novel
1983: John F. Kennedy Rises
From the Dead

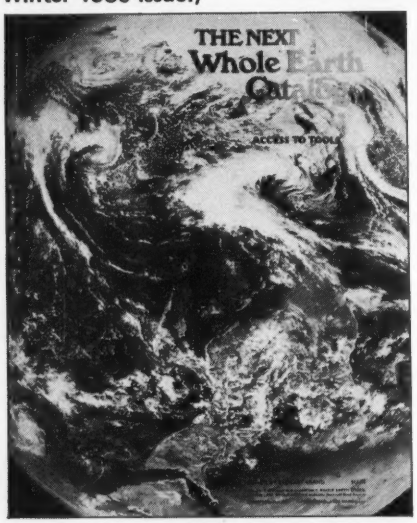
–SB

Announcements

1 **Present subscribers to CoEvolution will receive THE NEXT WHOLE EARTH CATALOG as their Fall 1980 issue of CQ (No. 27) at no extra charge.**

2 **CoEvolution subscription rates are going up to $14/year (individual copies, $4).**

3 **New $14 subscribers also will receive the $12.50 NEXT WHOLE EARTH CATALOG as their first issue (a $23 total value for $14), <u>but</u> the offer is only good until December 21, 1980. (New subscribers after that date will start with the ordinary Winter 1980 issue.)**



Explanation

Our tight corner is your good buy.

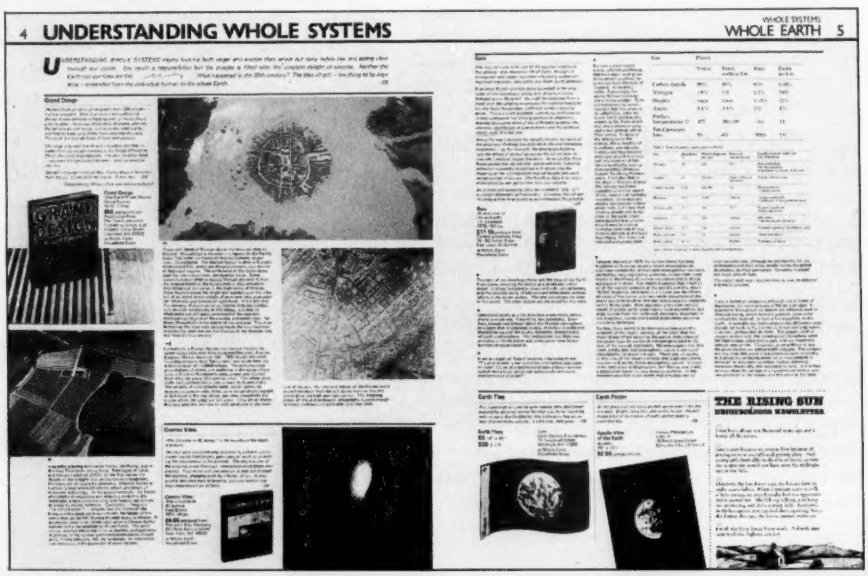
As intense as it is around here getting out 6-10 pages of **NEXT WHOLE EARTH CATALOG** *each day, it became clear that we could not conceivably do a Fall* **CQ** *at the same time. I guess many publications would shrug and say, "You'll get your Fall* **CQ** *in the Winter, gee we're sorry," but I'm tightass enough to regard subscriptions as some kind of promise or contract, and there it is right in the name — CoEvolution <u>Quarterly</u>.*

So — your Fall **CoEvolution** *will have 608 pages (1216* **CQ***-sized pages actually — the* **Catalog** *page is twice as big). It also has more <u>new</u> reviews and articles than any issue of* **CQ** *— hot stuff on personal computers, harpsichords, architectural-ecological standards, renting tools, electronic music instruments, a wealth of Anne Herbert's "Rising Sun Neighborhood Newsletter," the all time greatest personal tools, etc., etc. The thousands of items from* **The Last Whole Earth Catalog**, **Whole Earth Epilog**, *and 26 issues of* **CoEvolution** *have been exhaustively re-examined, re-evaluated for current relevance and availability, winnowed mercilessly, re-accessed (oh, the phone bill), reviewed, re-edited, and re-artworked into a bowl of 1500 items of pure cream.*

Then we figured, if it's good enough for you, it's good enough for your friends who might enjoy getting the same deal. We knew we had to raise the subscription price — the last increase was three years of steady inflation ago (that was when we went from $8 to $12/year and thereby stayed in business). A spoonful of sugar helps the medicine go down. With the **NEXT CATALOG** *we hoped that we might sweeten the event of $14, <u>and</u> — it being such an incredible deal — we might considerably increase the number of subscribers at a time and with an issue where that could be easily managed. Also, assuming you respond promptly to opportunity, we might generate some income just at the time of our maximum expenditures — the well over $130,000 we are at this moment busy spending on* **NEXT CATALOG** *production. That's the theory.*

The Post Office went along with the idea. Our distributor Random House went along with the idea. What do you think?

Ordered as part of a $14 **CQ** *subscription, ordered individually at $12.50 each, or awaited later in your bookstore ($12.50 there too),* **THE NEXT WHOLE EARTH CATALOG** *will be coming your way this October. —SB*



Mail Order Form

For Yourself

Back Issues on next page. See inside back cover for more details.

Make checks payable to:
CoEvolution Quarterly
Box 428, Sausalito, CA 94965

Please place your mailing label here:

Name

Address

zip

Please make sure your address is correct and complete, including zip or postal code number. Allow 5 - 6 weeks for delivery. Sorry, we don't bill.

Total For Yourself:

$

Total Enclosed For Yourself and Gifts

$

6263

CQ Subscriptions and Back Issues

☐ **1 Year** CoEvolution $14 (foreign $16)

Note: Subscriptions which begin with Fall 1980 and are received between June and December 1980 will include **The Next Whole Earth Catalog** *as the Fall 1980 issue of* **CoEvolution.**

☐ **2 Years** CoEvolution $25 (foreign $29)

☐ **Renewal** *Please check if this is a renewal*

☐ **First Class** U.S. & Canada, *add $5 for each year*

Air Mail, *for each year add:* Mexico & Central America $6; South America $9; Europe $9; all others $12.

☐ **Back Issues,** $3 *See next page. List by number:*

_____

The Catalog, Postcards, T-shirt, etc.

☐ **A Next Whole Earth Catalog $12.50** (can be ordered separately here or with subscription at left) ←

☐ **B Post cards** $3 for ten cards

☐ **C T-shirt** $6, please indicate size and quantity:

☐ X-Small ☐ Small ☐ Med ☐ Large ☐ X-Large

☐ **D One Million Galaxies Poster** $5 (Sent UPS in continental U.S. All others $7.50)

☐ **E Biogeographical Map** $3.50

☐ **F Soft Technology Book** $4.50

☐ **G Space Colonies Book** $4.50

☐ **H Two Cybernetic Frontiers** $2

Gift

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_____

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☐ **G Space Colonies Book** $4.50

☐ **H Two Cybernetic Frontiers** $2

Total this gift *Add to total above*

$

Name

Address

zip

Please send Gift Card from

6264

Supporting Subscribers

(tax deductible contributions)

☐ **Retaining:** $40/year. $26 tax-deductible. You get your **CQ** in an envelope, delivered first class, and we gratefully publish your name and town (unless you say not to). It's tax-deductible because we're a non-profit corporation.

☐ **Sustaining:** $100/year, $86 tax-deductible. You get your **CQ** in an envelope, airmail, and we gratefully bless your name and town in the magazine (unless you say no).

☐ **Maniacal:** $1000/life. $986 tax-deductible. You get your **CQ** in an envelope, airmail, for the rest of your life (or ours, whichever comes first).

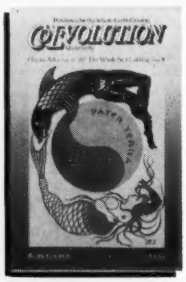
Back issues available for $3

No. 25
(Spring 1980)

Turning back the desert by planting trees, using light rail to revive public transportation, a report on Lynn Margulis' early difficulties and current success as a microbiologist, James Lovelock on being a self-employed scientist, "Our Enemies Our Selves" (on Russia), reader answers to questions about daily life, an article on shramadana — accomplishing community projects in Sri Lanka through sharing human energy, the life and opinions of Nepali Aama, a sensational old lady of the hills of Nepal, and reader letters about the R. Crumb factory cover.

No. 24
Winter 1979/80

The dehumanizing horror of factory work presented in a major poem illustrated on the cover by R. Crumb, how corporate patenting of seeds will cause hundreds of plant species to be lost forever, new wave music explained by insiders and outsiders, articles on how good solar home designs and humane hospital designs existed in the past and were lost to modern "efficiency," Michael Phillips on the non-importance of having a lot of money and Gregory Bateson on ending the arms race.

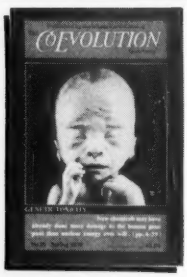


No. 23
(Fall 1979)

Guest edited section by George Putz and Peter Spectre on oceans: John Todd on ocean arks; Phil Conkling models the global carbon cycle; articles on boat restoration, the future of the fishing business and anti-submarine warfare; plus 30 pages of reviews and access in the Whole Sea Catalog.

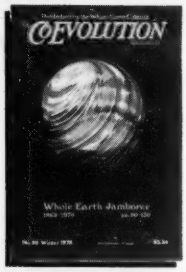
No. 22
(Summer 1979)

Reports on personal computer networks used cross-country for everything from gossip to business conferences to fantasy games, the Oregon women who forced the EPA to ban the herbicides that cause birth defects and miscarriages, the late E.F. Schumacher's belief that tree crops can save British agriculture, and the man who avoided banks and financed his own home by borrowing $10 each from dozens of friends.



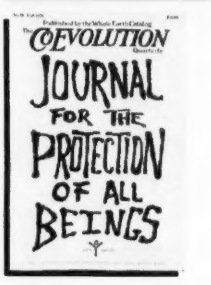
No. 21
(Spring 1979)

How chemicals are harming our genes, Dan O'Neill defying the U.S. Supreme Court by drawing Mickey Mouse, Judy Chicago on "Revelations of the Goddess," most used magazines reviewed by Nicholas Von Hoffman, Ursula Le Guin, William Irwin Thompson, Margo St. James, Ernest Callenbach, Robert Rodale and many others.



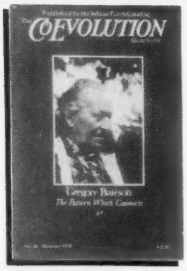
No. 20
(Winter 1978/79)

Fifty-six 5-minute speeches by such *CQ* regulars as Theodora Kroeber, Sam Keen, David Brower, George Leonard, Wavy Gravy, Paolo Soleri, J. Baldwin, Ron Jones, Peter Warshall, etc. Also a proposal for immediate world peace, reports on street performing, a self-sufficient solar home, edible landscapes, and excerpts from Anne Herbert's *Rising Sun Neighborhood Newsletter.*



No. 19
(Fall 1978)

An entire issue guest edited by poets Lawrence Ferlinghetti, Michael McClure, David Meltzer and Gary Snyder. Entitled *The Journal for the Protection of All Beings*, it includes Allen Ginsberg's "Plutonian Ode," Anne Waldman's "Plutonium Chant," Gary Snyder on the idea of nature in China, Peter Warshall on watching birds on the Farallone Islands and a previously unpublished poem by Jack Kerouac.



No. 18 (Summer 1978)

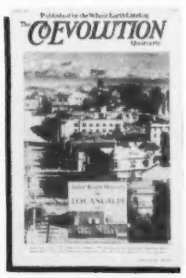
Thomas Szasz on why no one should be sent to mental hospitals, part of Gregory Bateson's new book, a special section on space — other countries' space programs, space business, and astropollution; and Mimi Farina on entertaining in institutions with Bread and Roses.

No. 17 (Spring 1978)

How the way you think may cause disease, Wendell Berry debating Earl Butz on what farming should be, Ken Kesey on cops without guns, articles on recombinant DNA as a Good Thing for the environment, how and why to tell your children stories, and off-the-road bicycles.

No. 16 (Winter 1977/78)

Guest edited section on Broadcast: 4 arguments for the elimination of television, an essay on how the mass media are smothering our capacity to create our own dreams, the stories of 4 lost pioneer broadcast inventors (including Nikola Tesla), Paul Krassner on the hypnotic regression of a television addict. Also regular *CQ* features and an article on the environmental movement in France, a new kind of wolf in Maine and fire-fighting in California.

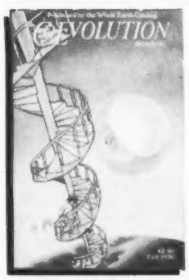


No. 15 (Fall 1977)

How the back to nature movement in Germany in the '20s may have helped pave the way to Nazism, Huey Newton reporting on living in Cuba, articles on new crops for desert areas of the world, starting a Hawksbill turtle hatchery to save the species, what happens at a spiritualist resort, and a report on the solar water heating boom in Los Angeles at the turn of the century.

No. 14 (Summer 1977)

Voluntary simplicity analyzed from the viewpoint of spiritual leaders and of businessmen, how astronauts use the bathroom in space, Elisabeth Kubler-Ross, who cares for the dying, tells about the experiences that have made her believe that death does not exist, J. Baldwin reports on wood burning stoves and J.G. Ballard has a science fiction story about an alternative technology Future (concluded in issue No. 15).



No. 11 (Now $5) (Fall 1976)

Underground architecture as an energy-saving, economic and very pleasant life style, arguments over whether the new data from Mars means there's life there, papers from the mind/body dualism conference, and Theodora Kroeber on cross-generational marriage.

Also available at $5 each (limited quantities) Numbers 5, 7, 8 and 13

No. 10 (Summer 1976)

Man Who Planted Trees and Grew Happiness: the true story of Elzeard Bouffier who single-handedly planted enough trees to turn a section of France from a desert to a forest; a report on the Hoedads, an Oregon tree planting cooperative; Ursula Le Guin on menopause, Steve Baer with a reminder that the Bomb is still there and still bad, and Margaret Mead and Gregory Bateson arguing and reminiscing.

No. 2 (Now $5) (Summer 1974)

Paul Krassner's *Tongue Fu,* Paul and Anne Ehrlich on the food shortage crisis, Michael McClure's GORF, and articles on apple picking, bookmaking and Stephanie Mills running a modern salon.

Turn back one page for order form.

for Order Form see facing page 144

Postcards, T-shirt, Maps

C↑ CoEvolution T-shirt $6

These are such a popular item that we've gone into a third printing. The shirts are 100% cotton and will shrink slightly. The design, surprisingly sharp and realistic, is by **CQ** regulars David Wills and Kathleen O'Neill. Five sizes to fit any body:

For boys or small women	
XSmall	— 14 - 16
Men's sizes	
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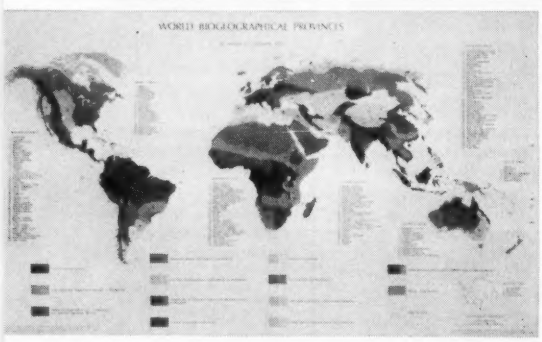
Medium	— 38 - 40
Large	— 42 - 44
XLarge	— 46 - 48



E↑ World Biogeographical Provinces Map 22½" x 39" $3.50

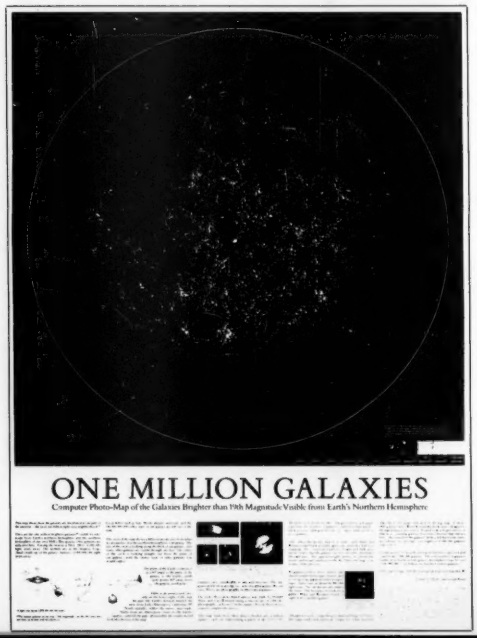
The first two printings sold out. This third printing includes Antarctica, corrects a few errors and has even sharper colors. You get a reprint of Raymond Dasmann's "Biogeographical Provinces" articles with the map. 22½" x 39", mailed in a tube.

B↑ Whole Earth Postcards Ten Cards — $3

Like the T-shirts this item evolved from private to public use. For short notes **CQ** has long used this bright, sharp Earth image on our postcards. You requested them for your own notes. Here they are

D↓ One Million Galaxies Map 39" x 47" $5 continental U.S. All others $7.50

"On a square yard of glossy black this poster image, profound, enigmatic, beautiful, presents in a clotted tangle of tiny gray squares one abstract but faithful view of the entire thing . . . No Tantric demon or benign celestial choir provides a more vivid symbol of the vastness of the universe in which we live." *—Philip Morrison Scientific American*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Computer Photo-Map of the Galaxies Brighter than 19th Magnitude Visible from Earth's Northern Hemisphere

Gary Haligren

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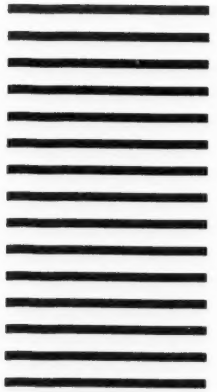

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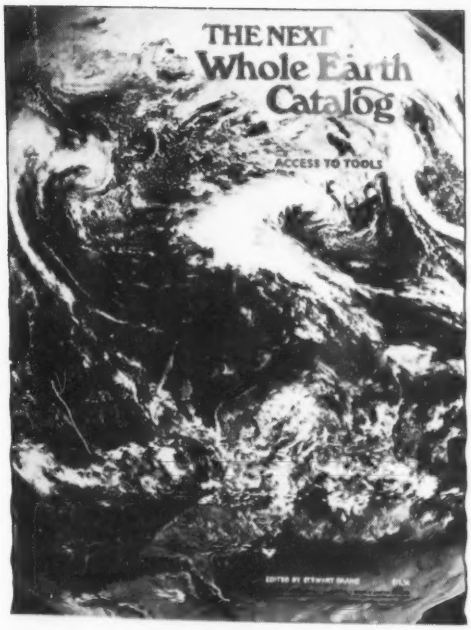
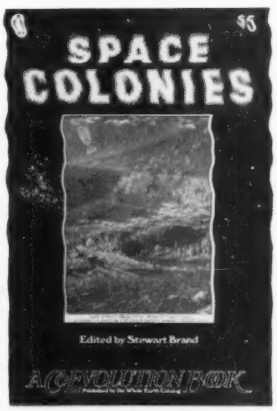


A The Next Whole Earth Catalog $12.50

Available in October 1980, this 608 page book assembles all the best "tools" we've seen in thirteen years of watching. You can get copies for $12.50 each. On the other hand, all **CoEvolution** subscribers who start before December, 1980, will receive the **Next Catalog** as part of their $14 subscription, along with three ordinary issues of **CoEvolution.** Define "ordinary," Harold. "Ordinary" means 144 pages, Hortense.

F Soft Tech $4.50

Here assembled is the inside lore of soft technology professionals — Steve Baer, John Todd, Day Charoudi, Witold Rybczynski, J. Baldwin, Malcolm Wells, etc. Includes the only discussion in print on the uses of the "heat muscle" alloy, Nitinol. 176 pages, indexed.



G Space Colonies $4.50

The space colony dream and current space efforts reported and evaluated from within by physicist Gerard O'Neill, astronaut Rusty Schweickart, Carl Sagan, Governor Jerry Brown, along with Jacques Cousteau, E.F. Schumacher, Ken Kesey, Gary Snyder, David Brower, Paul Ehrlich, Paolo Soleri, William Irwin Thompson, Richard Brautigan, John Holt, John Todd, and R. Buckminster Fuller. 160 pages, indexed.

H Two Cybernetic Frontiers $2

During the 2-year hiatus between the **Whole Earth Catalog** and **Whole Earth Epilog** I did nothing but two pieces of reporting. Those two stories informed everything that's happened since. They are: "Both Sides of the Necessary Paradox (Conversations with Gregory Bateson)" and "Fanatic Life and Symbolic Death Among the Computer Bums." 96 pages. —SB